Better FARMING METHODS

JANUARY, 1950

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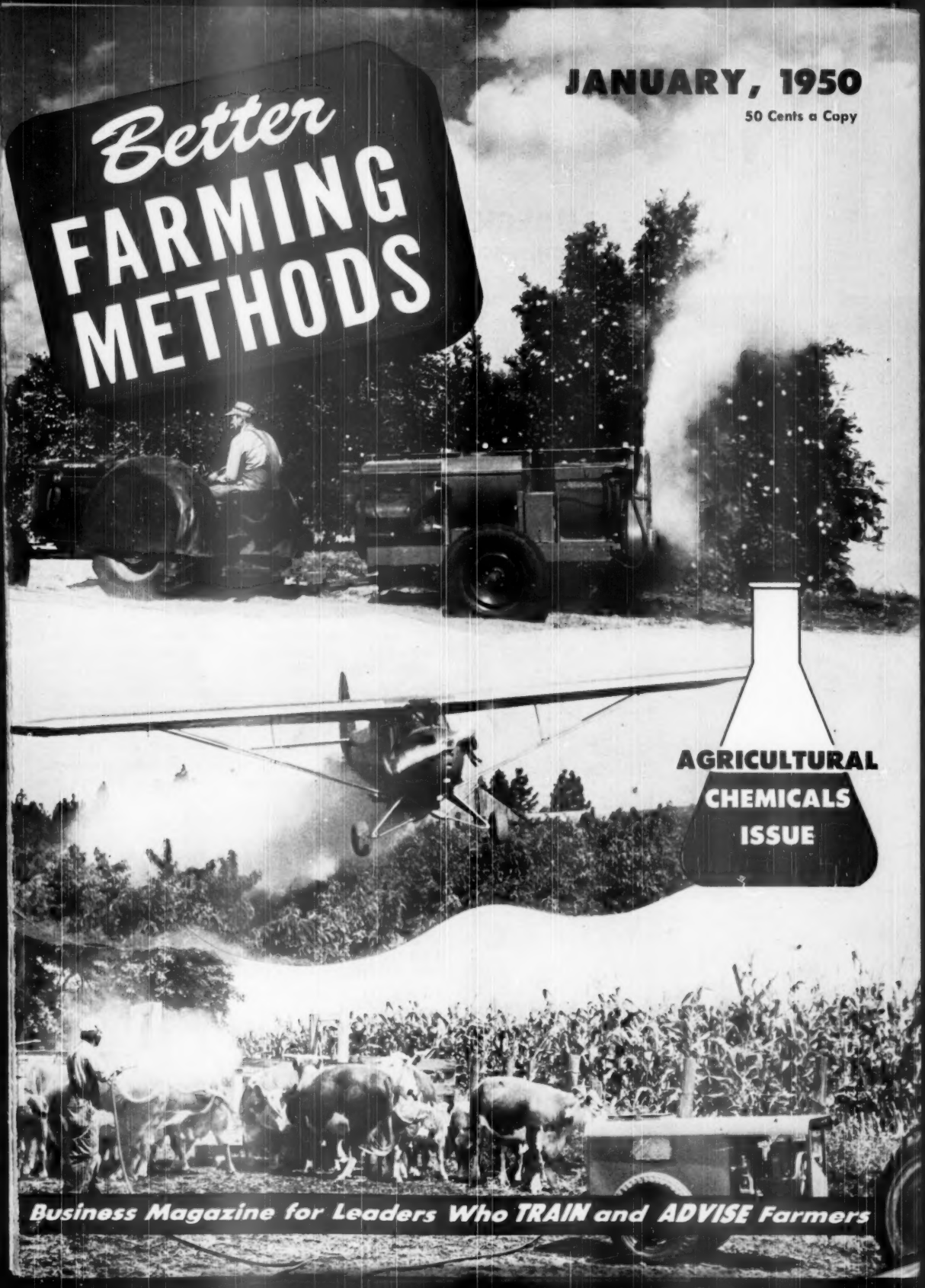
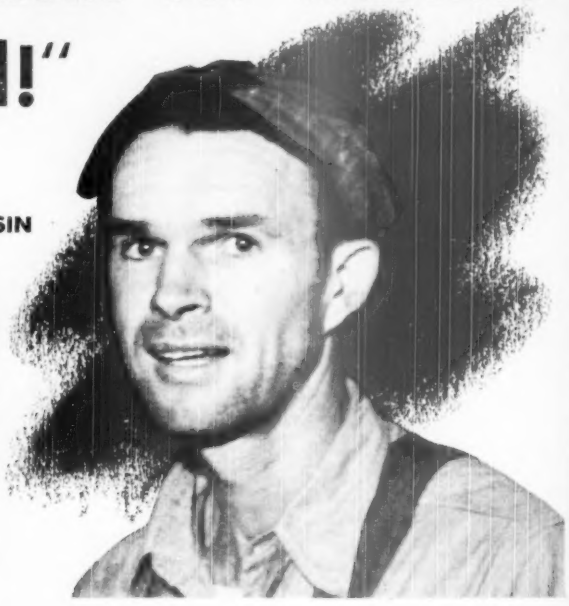


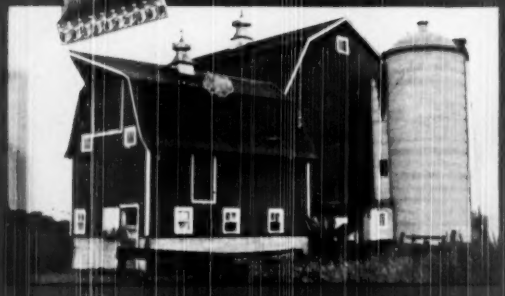
AGRICULTURAL CHEMICALS ISSUE

Business Magazine for Leaders Who TRAIN and ADVISE Farmers

"The best treatment for mastitis* I've ever used!"

SAYS **E. J. LUBECK**
OF MILTON JUNCTION, WISCONSIN





"I keep it right in the barn..."

"..where I can get it quickly..."

"...and use it to treat mastitis in a few seconds"

"We spent a lot of money trying to keep mastitis out of our herd of 27 Holsteins. We tried most of the mastitis treatments and nothing seemed to work.

"Then I read about Squibb's Penicillin Ointment in Hoard's Dairyman. I went to my druggist, bought my first tube and used it. *I have not been without it since.*

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"Whenever there is the least sign of mastitis in our herd, we treat the cow then and there, as we keep Penicillin tubes in the barn all the time."

• • •

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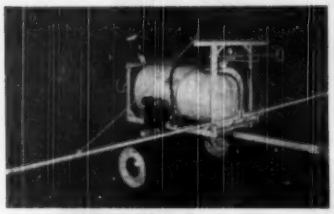

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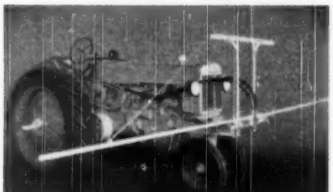

KROMER Tractor Mount Sprayers are made in four boom lengths, 13' to 32'.

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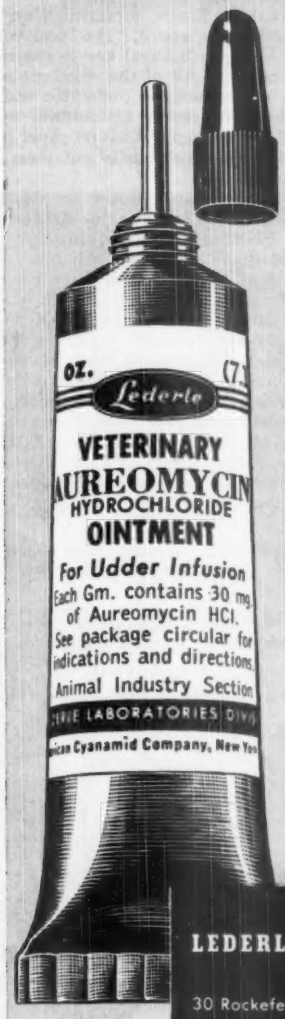

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MORE EFFECTIVE THAN PENICILLIN
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FREE-FLOWING AND SPREADS THROUGHOUT UDDER
COWS MAY BE MILKED REGULARLY
SAFE, WHEN PROPERLY USED
READY-TO-USE TUBE
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NO SYRINGE OR MILK TUBES
USUALLY ONLY ONE TREATMENT NEEDED (If necessary, repeat treatments at 48-hour intervals.)

Prompt treatment of mastitis with AUREOMYCIN OINTMENT will bring you *quick results in full production* of salable milk.

This product should be used in accordance with instructions in the package literature.

For maximum efficiency in the use of AUREOMYCIN OINTMENT, as well as for best management practices and disease-control procedures, consult your veterinarian.

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Club Congress . . .

Thrill of a Lifetime

"Better Living For a Better World," theme of twenty-eighth National 4-H Club Congress.

By MILTON R. DUNK
Editor

● FROM BEGINNING to end, the twenty-eighth National 4-H Club Congress, held in Chicago, November 27-December 1, was a *"thrill of a lifetime."*

Over 1,200 4-H boys and girls were award winners who won their reward of a trip to the Chicago meeting in contests conducted by the state and federal extension services, in cooperation with the National Committee on Boys and Girls Club Work.

Trip winners were the cream of the crop, selected from 19,000,000 boys and girls enrolled in 4-H clubs. They were chosen by state and county extension workers on the basis of proficiency in handling projects which they own and conduct themselves. Credit is given for increase in size of projects over a period of years, income from projects, use of improved methods, competitive records, and leadership accomplishments. As a culmination to the year's work, national winners received 120 scholarships, valued at $35,200.

Winners were honored at a barrage of breakfasts, luncheons and dinners, and were entertained by Jimmy Dorsey and his orchestra, Buddy Merino and his orchestra, James Melton, Metropolitan Opera star, and many excellent vaudeville acts.

Delegates and leaders had an opportunity to see, hear, and get autographs from, Gene Autry, Miss America of 1949 and Wayne King.

There was a host of sport celebrities at the Thomas E. Wilson dinner, including Ted Williams, John Lujack, Babe Didrikson, Gene Vance, John Karras, Allie Reynolds and Ted Schroeder.

Honor Local 4-H Leaders

The Dearborn Motors Corp., at their luncheon held in honor of the national poultry winners, paid an unusual tribute to the local 4-H club leader. A special table in front of the speaker's table was used to seat the local leaders attending the congress.

Frank R. Pierce, president, Dearborn Motors Corp., stated, "The local volunteer leader is the real key to the entire organization. All of the excellent planning of the national committee and the work of the county agricultural agents would be so many words on paper if the local leaders didn't help put them into action."

While delegates visited the Museum of Science and Industry, the Art Institute and Museum of Natural History, state leaders held their own meetings. Presiding at these sessions were Florence Howard, West Virginia; C. G. Staver, Colorado; and A. G. Kettunen, Michigan. Outstanding speakers, including Frank D. Slutz, Dayton, O.; and Elwain H. Greenwood, secretary, Oregon Bankers Association, addressed the leaders.

At one of the afternoon leaders' meetings, 16 mm. sound films for 4-H use were reviewed.

It was not all glamour for the delegates.

(*Continued on page* 70)

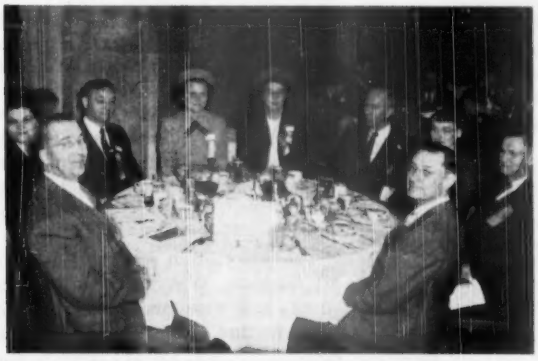
Club Congress delegates and leaders on parade in the amphitheatre at the International Livestock Show.

Miss America of 1949 (Jacque Mercer, Phoenix, Ariz.), spoke to 4-H club leaders and delegates. She is pictured here with Gertrude L. Warren (left), USDA extension service; and Raymond Firestone, Firestone Tire & Rubber Co.

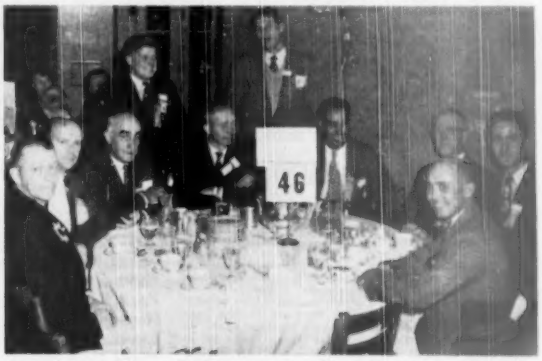
Gene Autry was there! Following the Dearborn Motors Corp. luncheon, Gene Autry was met with a barrage of 4-H autograph seekers. The charming 4-H girl at the left stepped aside so the Better Farming Methods photographer could get the picture.

Jimmy Dorsey and his nationally-known orchestra entertained 4-H club delegates and leaders in the Grand Ballroom of the Stevens Hotel, Chicago, Ill. (BFM Photo)

Chicken in the rough at the 4-H box supper, (l-r): P. K. Hooker, USDA; M. Yamashita, with Japan Ministry of Agriculture and Forestry; E. W. McKenzie, agricultural representative from Canada; Ray Turner, USDA extension service; E. A. Holm, Indiana assistant in boys and girls clubs; and S. Katayanagi, Japan vice minister of agriculture and forestry.



Group of state 4-H club leaders at the Firestone breakfast, (l-r): Burton W. Marston, Wyoming state club leader; Fae Roark, Louisiana associate state club agent; Fred W. Colby, Tennessee associate state club leader; Kathleen Flom, Minnesota state rural youth agent; Blanche Goad, Mississippi associate state 4-H leader; C. C. Lang, Ohio assistant state 4-H club leader; Jean Lee, Delaware state 4-H club specialist; J. W. Whitehouse, Kentucky state 4-H club leader; and R. H. Rasmussen, Wisconsin assistant state club leader.



One of the tables at the Harvester luncheon, (l-r): John B. Hanna, Kansas asst. state club leader; W. S. Wilson, Maryland asst. state club leader; M. M. LaCroix, Louisiana associate state club agent; Art Sunderland, Washington state 4-H club agent; K. C. Lovejoy, Maine state 4-H club leader; T. R. Townsend, DeLand, Fla.; Santiago D. Apodaca, New Mexico asst. state 4-H club leader; L. A. Hawkins, International Harvester Co.; George S. Foster, Tennessee asst. state 4-H club leader; and Lester O. Akers, Missouri state club agent.

Better FARMING METHODS

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Business Magazine for Leaders Who Train and Advise Farmers

As I See It

By MILTON R. DUNK, Editor

Something New—

We are proud to present to you this month the first Agricultural Chemicals Issue of Better Farming Methods.

During the past few years the agricultural chemical field has increased rapidly. It has been a difficult task for you to keep up-to-date on the many new developments. It is our hope that you will find this issue useful during 1950.

I haven't been able to get anybody to give me a guess on how much money farmers could actually save or make by applying the most efficient methods of weed, plant disease and insect control. As you can imagine, there are so many ifs, ands and buts to consider. Good crop years, general economic conditions and general cost of cultivation have a lot to do with the amount of money farmers can save.

Ernie Moore of the U. S. Department of Agriculture dug up some figures that will be of interest to you. The USDA's latest estimate on annual losses from plant diseases is $2,000,000,000. There is a total of 50,000 diseases listed, although the number having economic importance would be much lower.

The total annual loss from all insects is estimated to be $4,000,000,000, including the cost of control. A partial breakdown of some of the important ones, which appeared in the Hearings before the Agricultural Sub-committee last year, is as follows:

Cotton insects	$743,214,000
Cereal and Forage insects	892,240,000
Forest insects	5,500,000
Fruit insects	70,000,000
Household insects	60,000,000
Livestock pests	396,500,000
Truck Crop insects	193,327,000

Ernie Moore inquired about the estimated loss to farmers from weeds. The only figure he could get was $3,000,000,000, including cost of control. This estimate was made by the U. S. Chamber of Commerce in the 1930's. USDA weed specialists say this is a conservative figure in the light of today's costs and price.

Rats cause a loss of $200,000,000 every year.

There you have it—a bird's eye view of just how important "ag" chemicals are in agriculture.

A special "thank you" goes to the many entomologists and plant physiologists from chemical companies for their valuable help in planning this issue. The job could not have been done without their help.

How do you like this "ag" chemical issue? How can it be improved to better meet your needs? Your comments will be most welcome.

★

On the Boardwalk

If anyone ever deserved a word of appreciation, it is Lionel E. Cross, San Jose, Calif., past president, National Vocational Agricultural Teachers Association.

Credit for making the first national meeting a success must go to Lionel. The leadership that he has given to this newly-formed organization has helped to put NVATA on its feet. In the years ahead, vo-ag teachers will realize that his wisdom and foresight have made a lasting contribution.

A spontaneous burst of applause was sounded by delegates to the Atlantic City convention when Cross stated, *"We must continue to work for the professional advancement of vo-ag teachers."*

The association is grateful to L. M. Sasman, Wisconsin supervisor, vo-ag, and vice president, agricultural section, American Vocational Association, for his guidance to the executive committee during the past year.

The convention attracted 140 vo-ag teachers from 36 states. Thirty-three states have joined NVATA.

Here at last!..The Farm Building Handbook you've always wanted!

Brought together for the first time under one cover—the wealth of reference material scattered through various Federal and State College Bulletins! Simplified, condensed, fully illustrated!

266 DETAIL DRAWINGS AND PICTURES

134 PAGES—8½ x 11 INCHES

COVERS 17 TYPES OF FARM BUILDINGS

• Johns-Manville recently published for building material dealers and builders this practical new handbook on farm building that meets a long-existing need.

Since the announcement of this book, we have heard from many county agents and vo-ag teachers asking if they could obtain copies for their personal use or for veterans enrolled in institutional on-farm training programs and even for individual farmers.

As a result of these requests, we have printed an extra supply of the handbook and will be happy to fill orders at $1.50 each, from anyone interested in agriculture.

This well-illustrated volume discusses the particular requirements of structures used in various types of farming—buildings for dairying, poultry, hog raising, crop storage, beef cattle and many others. All recommendations are based on latest findings of the U.S.D.A. and State Agricultural Colleges.

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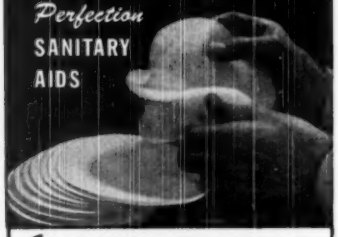
ALL MILK PRODUCERS NEED *Both* OF THESE *Perfection* SANITARY AIDS



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Ideal sanitary cleaners for washing milk pails, strainers, separators, milking machines, etc. also washing cows' udders. (Pat. No. 2112965)

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Milk producers save money at every milking with these super-quality, low cost, high efficiency filters. Farmers tell us ONE does the work of filtering as thoroughly as TWO of other types. Here is dependable quality that deserves your endorsement!

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AMERICA'S FOREMOST MANUFACTURER OF SANITARY FILTERING AIDS FOR DAIRYMEN

WASHINGTON NEWS

By FRED BAILEY and JAY RICHTER

FARM LEADERS LOOK TO ANDREWS—One of the most important but least-publicized jobs in the Agriculture Department today is held by Stanley (Colonel) Andrews.

Stanley Andrews

Like his big boss, Harry Truman, Andrews is a native Missourian. His routine task, as head of USDA's Office of Foreign Agricultural Relations, is to keep tab on world food supplies.

But the colonel is a tall, lean, and hungry-looking man, also determined to do his best to help feed the world. And, not so incidentally, to help solve this country's vexing surplus problem.

Right now, that problem is troubling farm leaders, not to mention farmers, more than any other. Agriculture Secretary Brannan is leaning more heavily upon "the colonel" than any other single man in a desperate effort to maintain United States export markets.

Fears are mounting that Marshall Plan aid . . . now financing fully half of all United States farm exports . . . will be cut sharply by Congress in the New Year.

Scouts from Andrews' office are fanning out in all directions to feel the pulse of foreign markets. There is little sign of life in many areas, but Andrews and others are dead-set to administer injections.

Developments to watch for include these:

(1) Moves to encourage more United States purchases and investment abroad so that foreign nations can earn dollars to buy from this country. Such action is to become increasingly important as the flow of give-away dollars dwindles.

(2) More funds to promote Truman's Point 4 program for development of poor nations so that they can eventually increase trade with the United States.

(3) Attempts to work out more international commodity deals similar to the wheat agreement now providing the U.S. foreign markets with about 165 million bushels annually.

(4) Efforts to work out a 2-price arrangement, providing farmers one price for commodities sold at home and a lower price for the "excess" sold for export.

WORDS—DEEDS—ELECTION—Washington farm leaders are not looking for much new in the way of agricultural legislation in the New Year.

Words will be more plentiful than deeds at the upcoming session of Congress. There's an election coming up next fall, with all house and one-third of the senate seats on the auction block.

Bills to divorce Extension Service and Farm Bureau in states where the knot is still tied probably won't get far. Too many lawmakers need the powerful backing of the Farm Bureau for re-election.

There will be a drive, aided and abetted by (*Continued on page* 80)

When writing advertisers please mention *Better Farming Methods*

Toward Richer Soil

Better Use of Farm Produced Fertility

● Here are two new, effective visual aids to proper handling of barnyard manure . . . and wider use of green manuring crops.

In the new educational booklet, "Handling Manure for Extra Benefits," information from many experiment stations is brought together in condensed, easy-to-grasp form. Topics covered include value of manure, how to save it, modern methods of handling, rates of application, and proper storage. Also discussed briefly are other sources of fertility, including green manure crops, crop residues, and commercial fertilizer.

The full-color 24 by 36-inch wall hanger, "New Life for Your Land," provides at-a-glance inspiration toward wider use of soil-enriching green manure crops. In a single phrase it presents the answer to many problems of soil structure, drainage, and reduced yields.

Ask nearest Case dealer for booklet and wall hanger, or write directly to Educational Division, J. I. Case Co., Racine, Wis.

Get this Dual-Impact Index. Use the one-two, follow through method to make your presentations more impressive, more permanent. Get the impact of vivid, inspirational full-color sound films. Repeat the impact with take-home booklets that revive memory, provide information for permanent reference. This new folder gives at a glance the titles and scope of Case films with parallel booklets. It also lists wall hangers and slide films. Write today for your copy of "Case Visual Education Materials."

CASE

New Developments in . . .

"AG" Chemicals

By G. S. HENSILL

The laboratory is the starting place for the development of new agricultural chemicals. Research and testing are necessary before new chemicals are placed on the market for farmers to use. (Photo courtesy Monsanto Chemical Company)

● REDISCOVERY and development of DDT *(dichloro diphenyl trichloroethane)* as an insecticide during World War II has brought about very drastic changes in insecticidal materials and agricultural chemicals.

This development has not only affected insecticides, but its influence has been felt all down the line of agricultural chemicals. Following the introduction of DDT a whole series of new organic insecticides has been brought into the market; included among these are such materials as benzene hexachloride and its pure gamma isomer, now called lindane; toxaphene, chlordane, methoxy DDT, DDD *(dichloro diphenyl dichloroethane)* and the phosphate chemicals such as tetraethyl pyrophosphate and Parathion.

In addition to the above named insecticides material development has taken place in plant hormones for weed control work, such as 2,4-D and 2,4,5-T. Also, developments in defoliants and various other agricultural chemicals have been quite extensive. As a result, the insecticide and agricultural chemical industries have been faced with drastic changes and development in the last few years, and it is well safe to say that the changes in the industry and materials involved in the last few years have surpassed changes that took place during the previous twenty-five years.

Specific mention and description of the various materials seems in order, although many "ag" leaders are well familiar with them.

DDT and its relatives, such as DDD and methoxy DDT, are materials which have found wide usage in agriculture and in sanitation work such as fly and mosquito control. These insecticides are effective against a wide range of insects, including caterpillars, beetles, roaches, flies and mosquitoes, lice and fleas, and numerous others. They are somewhat specific; that is, certain compounds are more effective on some insects than on others, but their use adversities have been by now fairly well ironed out. One of the chief values, of course, in materials of this nature is their residual action. Of importance is the fact that the compounds are stable and will persist for days and weeks indoors after application, leaving residual deposits which may kill insects for a long period of time. This has made them very readily applicable to certain types of usage where a number of applications of material can be reduced, and various other use factors have been in their favor. For instance, in some agricultural areas where pome fruits are grown, DDT apparently bid well to almost eliminate the codling moth which has been a very important insect for many years.

BHC a General Insecticide

Benzene hexachloride is another organic chemical found to have insecticidal value and its use and development was undertaken in England during the war, about the time of the DDT work in the United States. This chemical, known as benzene hexachloride or hexachlorocyclohexane, is an excellent and general insecticide. It will kill as wide an array of insects as DDT or its relatives. For instance, it is an excellent aphicide, which the other materials are not generally considered. In addition, benzene hexachloride has a three-way action of stomach contact and vapor poison action as compared to the two-way action of DDT and the related materials. Benzene hexachloride, of course, has as the chief objection the odor imparted to it by certain undesirable isomers occurring in the commercial compound. This has been overcome by refinement and will be covered in the discussion to follow on the chemical, lindane.

Toxaphene, *(chlorinated camphene)* is another material which was developed and found to be generally useful in control of grasshoppers, crickets, cutworms. Uses in other lines are also being developed; such as, for control of thrips, and to some extent for red spider. It has had large usage on cotton and on general field crops for control of the above mentioned pests.

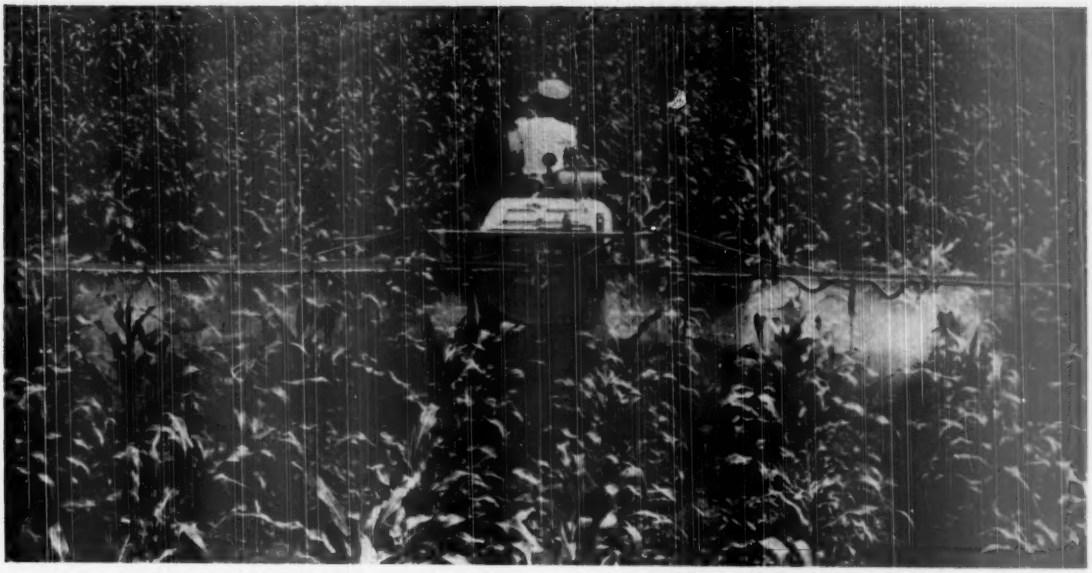
Work for Better Residual Life

Chlordane is another insecticide introduced at the time of the other insecticides, which has also been found useful in control of grasshoppers, crickets, roaches and ants, and now bids well to be replaced by new materials of similar nature developed by its manufacturers which apparently have higher insecticidal efficiency and better residual life. It is also possible that the new materials have higher toxicity, but this has not as yet been determined.

Of the phosphate chemicals introduced as insecticides, two are of chief interest. One is the tetraethyl pyrophosphate which originally was introduced as hexaethyl tetraphosphate. The other phosphate insecticide introduced in recent years is the material known as Parathion, which is a very effective insecticide for control of red spider mites and aphis, and some other insects. However, it has to be applied and handled cautiously as it is a highly toxic material, is stable to some extent, and imparts some persistence and residual problem on sprayed fruits and vegetables. The entire usage and possibilities of Parathion have not been fully developed and the material, to some extent, is still being used on a partially investigational basis. It has a high vapor action and this fact may limit its field use to some extent.

Of the various insecticides herewith mentioned, two are deemed worthy of

(Continued on page 72)



Multiple-purpose farm power sprayer being used for control of corn borers. The sprayer can also be used for other spraying jobs on the farm.

What to Look for in Selecting . . .

Sprayers and Dusters in 1950

By EARL D. ANDERSON
National Sprayer & Duster Assn.

● THE FEATURE of the 1950 models of application equipment for control of insects, plant diseases, weeds and brush on farms is the multiple-purpose farm power sprayer.

This versatile type of sprayer was developed to meet the needs of farmers who wanted to do a better job of weed and fly control and who found early post-war models of equipment inadequate for the many other new profitable spraying jobs around the farm.

Essentials of a Good Sprayer

These new sprayers are self contained units with the tank as an integral part. The piston type pumps, with which most units are equipped, are noted for long life and their ability to handle any of the new chemicals without excessive wear. These pumps make possible a wider range of pressures from the 30 or 40 pounds per square inch for weed spraying up to 400 pounds per square inch and more for such jobs as cattle grub control, cleaning machinery or hog houses, or spraying trees.

Positive agitation which is essential for keeping emulsions and suspensions of wettable powders properly mixed is provided for in these units—correcting a serious shortcoming of early post-war models of sprayers. Sturdier construction of booms readily adjustable for height, improved filtering systems and finger tip controls are new features which contribute to trouble-free convenient operation.

Fit the Sprayer to the Farm

With the above essential features in mind, the sprayer should be selected to fit the size and type of the individual farming operation. List the various jobs for which the sprayer is needed on a farm. Then opposite each job list the estimate of acreage, number of head of livestock or number of trees to be treated and the number of treatments. Also from recommendations available from your state agricultural college, list the proper rate of application and pressures for each job. From this table you can easily determine the size of the tank, length of boom and pump specifications of the sprayer required. Then go to your local dealer in whom you have confidence and, with his help, select the model of sprayer best suited to your present and anticipated needs.

Remember that many new spray materials are becoming available constantly, increasing the number of jobs for which a sprayer can be profitably used. Therefore, it appears wise to choose a sprayer with adequate capacity and pressure range in anticipation of these new uses. Another important consideration is to select a make of sprayer backed by a company which has a *good reputation* in the spraying business and who can be depended upon to supply replacement parts if needed.

Power sprayers are no longer made only for the large specialized farmers. Units are now available for every type of farm with tank capacities ranging from as little as 12½ gallons to 400 gallons or more, with a choice of skid or wheel mounting and powered either by the tractor or a separate engine or motor. Skid sprayer units, engine powered, may be mounted on trucks, jeeps, wagons or trailers or on rear tractor platforms for field use.

Improve Tractor Mounted Sprayers

Wheel or trailer mounted sprayers are ready for instant field use by attachment to tractor or truck drawbar and may be powered either by the tractor power take-off shaft or by a self-contained engine. The engine-powered units will operate at a uniform rate regardless of

(*Continued on page 78*)

1950 OFFICERS of the National Association of County 4-H Club Agents. FRONT ROW (l-r): Andrew Olsen, Traverse City, Mich., first vice president; Robert A. Dyer, Hudson, N. Y., president; Mrs. Clara Oberg, St. Paul, Minn., secretary-treasurer; and Clifton Dolson, Princeton, W. Va., second vice president. BACK ROW (l-r): Henry Krebser, Litchfield, Conn., director and past president; and Mrs. Edna M. Coulson, Minn., director. The officers met at the close of the convention to make plans for 1950.

County Club Agents . . .

Make Progress in 1949

By MILTON R. DUNK
Editor

● "THE NATIONAL Association of County 4-H Club Agents is getting its feet on the ground." That was a comment made at the convention of the organization, held November 27-30, in Chicago's famed Stevens Hotel.

The annual convention was attended by 65 club agents, representing 19 states.

During 1949, Maine, Ohio, Illinois and Iowa joined the national group.

At one of the opening sessions, representatives from various states explained activities and problems in their home states. The convention had not been underway long until club agents were called by their first names—Hank, Tillie, Bruce, etc.

F. J. (Dutch) Keilholz, associate editor, Country Gentleman, dropped a bomb shell when he spoke on "4-H Club Work as a Profession." Keilholz made a survey which indicated the club agent's job was a stepping stone to other extension positions. As you can imagine, a lively discussion followed, with no holds barred.

One of the highlights of the meeting was the distinguished service dinner, sponsored by the Sears-Roebuck Foundation. Awards were presented to Harold J. Aase, Virginia, Minn., and Tilford W. Cocks, Norwich, Conn. E. E. Bergstom, Rutland County, Vt., was also named for the service award, but he was not present at the convention.

Two years ago the association adopted a policy of giving suitable recognition each year to those who had made outstanding contributions to 4-H club work.

Recommendations were reviewed by the distinguished service committee. Facts taken into consideration include:

1. Length of service in 4-H club work.
2. Individual accomplishments to promote 4-H club program.
3. Soundness and permanency of service.

Headline Speakers on Program

Speakers on the program included: M. L. Wilson, Gertrude L. Warren, and E. W. Aiton, all of the USDA extension service. In addition, L. E. Hoffman, Indiana associate director of extension; Guy L. Noble, managing director, National Committee on Boys and Girls Club Work; and A. G. Kettunen, Michigan state 4-H club leader, spoke to the club agents.

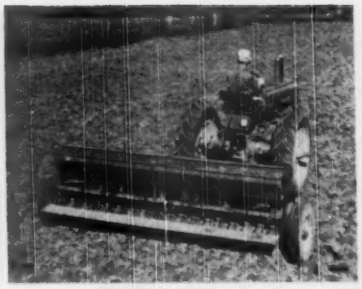
At a business meeting it was voted to revamp the organization's constitution

(*Continued on page* 72)

INTERMISSION time at the Club Agents Convention. Four-H work was the topic of conversation at most of the informal sessions. If the club agent reading the Chicago Tribune will identify himself, Better Farming Methods will send him a surprise gift.

MRS. EDNA COULSON, presenting distinguished service awards to Tilford Cocks (center), New London county, Conn., and H. Aase, St. Louis county, Minn. E. E. Bergstrom, Rutland county, Vt., not present at the convention, was also named for the service award.

Side Dressing



Top Dressing

Common Methods of Applying Fertilizer

● THERE ARE many ways of applying fertilizer, each of which has its advantages. The method to be used depends upon the crops, soil, climate, date and rate of application, kinds of fertilizer and equipment available. The aim should be to get the fertilizer in the soil where it will do the most good.

BANDING ALONG THE ROW: Distributing the fertilizer in bands one or more inches wide on either or both sides of the row while planting, usually at or below seed level.

DRILLING WITH SEED: Applying fertilizer in the row when the seed is drilled or planted. This method should be used only with seed that can tolerate contact with fertilizer, such as the small grains, and usually relatively light rates of application are used.

BROADCASTING—BEFORE PLOWING: Spreading fertilizer uniformly over the field. Plowing mixes it with the turned layer. This method is well adapted for heavy application of fertilizer, particularly when large amounts of crop residues or cover crops are on the land.

BROADCASTING—AFTER PLOWING: Spreading fertilizer uniformly over the field on the plowed soil.

DEEP DRILLING—AFTER PLOWING: Placing fertilizer in bands at desired depths in the soil.

PLOWSOLE or DEEP FURROW: Putting fertilizer in a band on the bottom of each furrow before the next furrow is turned. Heavy applications can be made this way. Fertilizer is placed deep in the soil and encourages deeper root growth.

SIDE DRESSING: Putting fertilizer along the row after crops have started growing. Often used on truck and other crops where large amounts of readily available fertilizer, such as nitrogen, are desired.

BEDDING: Applying fertilizer in the bottom of the furrow, then bedding or covering before planting.

STARTER SOLUTIONS: Dissolving fertilizer in water and applying at the time of transplanting various crops is a

(*Continued on page* 70)

Plowsole or Deep Furrow

Banding Along the Row

When writing advertisers please mention *Better Farming Methods*

When Soils or Crops Need

MAGNESIUM

recommend this practical and convenient *natural* combination of soluble magnesia and sulfate of potash

Sul-Po-Mag

Water-Soluble

Double Sulfate of Potash-Magnesia

Rapidly increasing numbers of farmers are finding it profitable to use fertilizers containing soluble magnesia and potash in combination with other plant foods in mixed fertilizers.

Earlier maturity, healthier growth and larger yields of a variety of crops are reported by many farmers, agricultural colleges and experiment stations following the use of Sul-Po-Mag on magnesium-deficient soils.

Sul-Po-Mag is a natural combination of magnesium and potash formed in the mineral langbeinite, mined and refined exclusively by International at Carlsbad, New Mexico. Both the magnesium and potash are in water soluble form and are immediately available to crops.

Sul-Po-Mag is supplied by leading fertilizer manufacturers in mixed fertilizers or bagged for direct application to the soil.

SUL-PO-MAG TRADEMARK REG. U. S. PAT. OFF.

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INTERNATIONAL MINERALS & CHEMICAL CORPORATION

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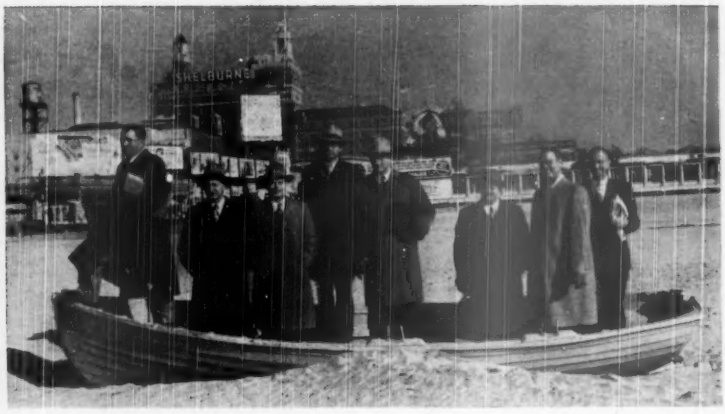
ILLINOIS Vo-Ags, enjoying the salty air in a push chair, on Atlantic City's famous boardwalk. (l-r): B. B. Battershell, Shelbyville; F. M. Parkinson, Lena; and John Mathews, Shabbona. (BFM Photo)



BOAT LOAD of 1950 National Vo-Ag Teachers Association officers. (l-r): Parker Woodul, Portales, N. M., pres.; Max Lampo, Neosho, Mo., V. P., region 4; Neil Johnston, Clarinda, Ia., V. P., region 3; A. C. Hale, Camden, Ark., V. P., region 5; Jess Smith, Lake Geneva, Wis., treasurer; C. W. Seabold, Reisterstown, Md., V. P., region 6; and Leroy Bunnell, Tremonton, Utah, V. P., region 1. J. L. Harvey, Loveland, Colo. (not shown), V. P., region 2. (BFM Photo)

MISSOURI DELEGATION to NVATA, viewing one of the many commercial exhibits in Atlantic City's auditorium. (l-r): C. A. Jackson, Sweet Springs; Charles Hill, Cameron; Max Lampo, Neosho; Norman Hilgedick, Clarence; and Enoch Tolleson, Malden. (BFM Photo)

VO-AGS Move Ahead at . . .

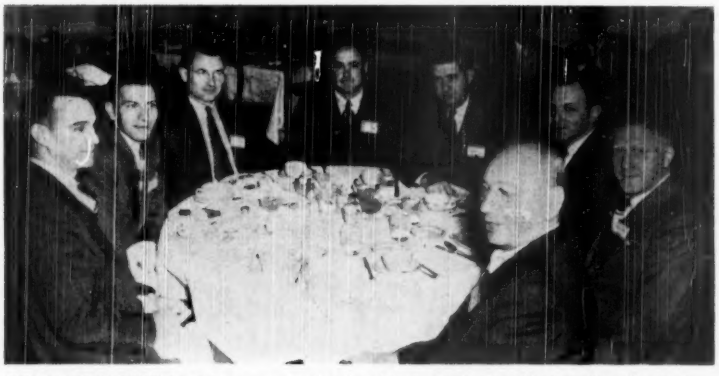
First National Meeting

● MAYBE it was the salty air from the Atlantic, but vo-ags were more than pleased with the first convention of the National Vo-Ag Teachers Association, held December 6-10, Atlantic City, N. J. The meeting was held in conjunction with the 43rd Annual American Vocational Association Convention.

L. E. Cross, San Jose, Calif., capably presided at all of the NVATA meetings.

Business sessions, regional meetings, agricultural trip and AVA banquet highlighted the first convention. Many vo-ags took part on the program of the agricultural section of AVA. The 1950 meeting of NVATA will be held in Miami, Fla.

Atlantic City's recreational and sea food eating facilities provided a change of pace for conventioners.—Editor



ONE OF THE TABLES at the vo-ag teacher breakfast. (l-r): Harold R. Binkley, Lexington, Ky.; James H. Melvin, Ashland, Ky.; Ralph Gruenwald, Tipton, Ia.; E. W. Graham, Millen, Ga.; Glenn Segars, Swainsboro, Ga.; Chester Hiett, Moorefield, W. Va.; Ellis F. Clark, Woodbury, Conn.; and W. L. Norton, Petaluma, Calif. (BFM Photo)

ARKANSAS vo-ag men holding gift packages of New Jersey processed food. (l-r): S. D. Mitchell, executive FFA secretary; Clyde B. Hogan, Marianna; and A. C. Hale, Camden.

more profit per acre . . . more output per man

with the New Automatic

OLIVER BALER

Good legume hay is one of the greatest soil savers. And, the new Oliver Model 8 Bale Master is one of the finest crop-saving machines you can buy. Both produce profit in your soil building program.

This completely automatic wire-tie Oliver Bale Master boosts your margin per acre further by increasing output per man. Only a tractor driver is required, and he can bale 4 to 5 tons per hour under average conditions.

Another thing—the Oliver Model 8 Bale Master is reliable . . . stays on the job when time counts most. A simply designed mechanism ties the wire in short, firm-holding knots and tucks the ends into the bale. The full-floating pick-up unit lifts the hay gently . . . saves the precious protein-bearing leaves.

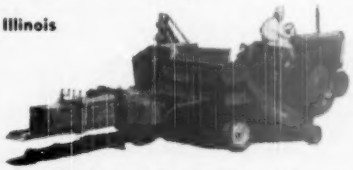
Auger, cross conveyor and Sav-A-Man Force Feeder work in unison . . . handle the heaviest windrow. A "big beat" feeder head helps produce smooth, neat bales that come apart in large-sized, sliced sections for convenient feeding.

THE **OLIVER** CORPORATION 400 West Madison Street, Chicago 6, Illinois

OLIVER

"FINEST IN FARM MACHINERY"

Oliver "66", "77" and "88" Tractors are built in 6 basic types and 8 variations



An Oliver automatic wire-tying unit is easy to service . . . easy to get at. You can replace a spool of wire in a couple of minutes. Tying units are enclosed . . . fully protected. Knotter box can be detached by merely removing four bolts. Choice of three bale lengths—36, 40 or 44 inches.

From the Colleges *and* Experiment Stations

Salt Mixture Saves Labor

Some Arizona stockmen have used for years the cottonseed meal and salt mixture as a supplemental feed for livestock in winter, and tests now show that this method is as good as the hand feeding method, says Walter Armer, animal husbandry specialist for the Agricultural Extension Service at the University of Arizona.

A saving in labor is made when this self-feeding mixture, with salt as the regulator, makes it possible for cattle to get supplemental feed when they come in for water. The salt in the mixture insures against the animals eating too much of the feed.

In tests that were run, four parts of meal with one part of salt as a mixture was compared to the hand feeding method.

Results from the tests show the salt and meal method of supplemental feeding to be equal to the hand feeding method. This means the stockman can put out several days supply of feed at one time, enabling him to make a real saving in labor.

★

Control Cattle Lice

C. S. Rhode, Illinois extension dairy specialist, says one of the best remedies for killing all kinds of cattle lice is derris powder, containing from one-half to two percent of rotenone.

Dust the cattle a second and third time at two-week intervals to kill young lice that may have hatched since the first treatment.

Another powder that will give good results is a five percent DDT dust. Use about two ounces per animal at each dusting.

Without dusting, dairy animals may become infested with lice and become unthrifty.

★

Corn Borer Losses Costly

Preliminary estimates of the extremely heavy damage to corn caused last summer by the European corn borer are now being received by the USDA. These early estimates from only a few of the infested states indicate that this pest has become one of the most important single agricultural insect species in the United States.

The total amount of corn lost to the borer in Ohio, Indiana, Illinois, Iowa, Wisconsin and Minnesota in 1949, may exceed 250 million bushels, according to preliminary estimates based on surveys now being conducted by USDA entomologists. Last year the insect caused an estimated loss of nearly 100 million bushels of corn, worth approximately 103 million dollars, in the entire country.

★

Blackfly Threatens Southwest

A new insect pest is moving north through Mexico toward the citrus belt of the southwest. But already the United States is tackling the threat of the citrus blackfly. It is developing a plan for its control while trying to retard its advance.

Federal entomologists believe they have developed a satisfactory spray control program that can be used when the insect reaches the United States. The citrus blackfly now is within 270 miles of the Arizona border and 125 miles from the Texas citrus area.

James F. Cooper, USDA entomologist, has been in charge of the large-scale spraying experimental control project against the citrus blackfly since the United States began control efforts in May, 1948. The insect has been known for 14 years, but until five years ago there were no funds to tackle the problem.

Cooper said the United States control program makes use of rotenone in a solvent, applied from the ground either by hand gun or speed sprayer. He said the American effort is demonstrating to the Mexicans the value of insect control programs; and while helping the Mexicans, the program is helping American growers by staving off the pest and enabling this country to obtain the know-how before the citrus blackfly reaches our border.

★

Night Lights Don't Help Pigs

Pigs will get up and eat if lights are turned on at night, but it won't help produce pork chops much faster, University of Minnesota swine specialists reveal.

Last winter University Farm animal husbandmen set up an experiment on night feeding of pigs. They wanted to find out if there was the same advantage from artificial lighting for the hog raiser as there is for the poultryman.

Lights were turned on from 10 to 11 o'clock at night and from 3 to 4 o'clock in the morning in one pen, but not in another.

Considering the difference in the average initial weights of the pigs, the use of artificial light did not seem to influence either the rate of gain or the feed consumed per 100 pounds of gain.

★

Reduce Apple Bruising

Damage to apples from bruising during picking, handling and packing may be reduced materially, as the result of findings made by plant scientists of the U.S. Department of Agriculture in apple bruising investigations at Wenatchee, Wash.

Apple growers can reduce bruising by close supervision of picking operations, and by handling apple boxes on pallets—wooden platforms on which 24 or 30 boxes of apples are placed for mechanized handling. Only one-fifth as much bruising was found when apple boxes were handled on pallets as when the boxes were handled separately. Bruises incurred during storage of loose fruit were also found to be less with apples handled on pallets.

Apples dumped into a water bath showed fewer bruises than those carefully dumped on a canvas belt as it passed over a solid surface. New style machines with dumping table and washer progressor on the same level caused fewer bruises than old type machines.

★

Study Value of Phosphate

The value of rock phosphate as a source of phosphorus is closely related to the soil pH (acid reaction).

Recent work by USDA scientists shows that when rock phosphate was used in soils with relatively high pH, plants absorbed less phosphorus from the fertilizer than from the soil. However, when superphosphate was used in the soil, pH did not influence the relative uptake of phosphorus from super phosphate. At pH 5.8 (a mildly acid soil), plant removal of phosphorus from superphosphate equaled or exceeded that from rock phosphate even when four times more rock phosphate was applied. Total uptake of phosphorus from the rock phosphate was more than 16 times that of calcium from the same source.

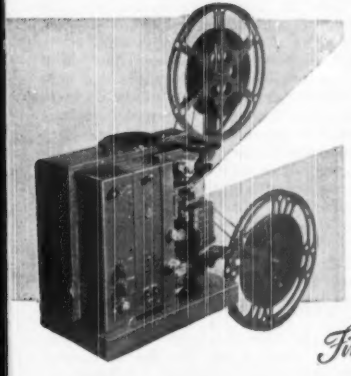
Soybean Folder Available

The federal extension service has published a small folder entitled, "8 Steps in Grading Soybeans," under the revised standards effective September 1, 1949. The grading of soybeans is taken up, step by step, from drawing the sample to the final grade determination.

Copies of the folder may be obtained on request from W. B. Combs, 1108 Post Office Bldg., Chicago 7, Ill. Ask for Extension Service Folder AIS-84.

CONTRAST Makes the Picture Realistic!

GET HIGHEST QUALITY PICTURES by projecting your 16mm films with the *RCA "400"*



The screen image stands out clear and crisp because of the superiority with which the RCA "400" projects contrast between the light, middle and dark values on the film. Pictures are sharp to the edges of the screen.

Striking contrast of light and dark areas brings out the finest characteristics of form and texture. Greater contrast makes black-and-white scenes more effective and more dramatic . . . re-creates glorious color values in full-color pictures.

You'll find audience reaction more responsive . . . your 16mm film showings more appealing—when the scene is projected with the RCA "400".

Owners say the RCA "400" is the best buy for the money . . . the easiest projector to thread . . . simple to operate . . . provides maximum protection to valuable films.

Don't overlook the RCA "400" when buying 16mm sound projectors for use in schools, churches, business or industry.

* * *

RCA "400" JUNIOR. *The only single-case standard 16mm sound projector of fully professional quality.*

RCA "400" SENIOR. *Provides theatre-quality reproduction of 16mm sound and pictures for larger audiences, auditoriums or larger rooms.*

First in Sound... Finest in Projection

VISUAL PRODUCTS
RADIO CORPORATION of AMERICA
ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal

MAIL COUPON FOR MORE DETAILED INFORMATION

VISUAL PRODUCTS (Dept. 134A)
Radio Corporation of America, Camden, N. J.

Please send me complete information on the RCA "400" Sound Projector.

Name_____

School_____

Street_____

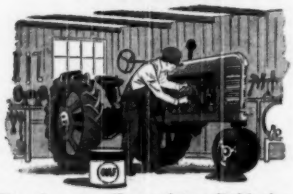
City_____ State_____

January Farm Bulletin

This Month:

1. About Overhauling Farm Machinery.
2. Useful Tip for Tractor Owners.
3. Avoiding Electric Motor Repair Bills.
4. An Easy Way To Get Yourself Some 5-gallon Cans.

1. About Overhauling Farm Machinery.



There's generally a quiet spell this time of year, when you get time to work around the shop, greasing and overhauling.

You can make the job a lot simpler by using Gulf's new All-Purpose Farm Grease. It does nearly everything, from greasing tractor distributor shafts to preventing rust on mower blades. And you only need to store one can of grease.

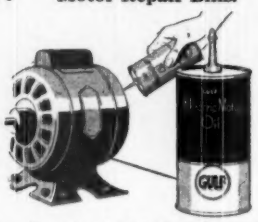
This All-Purpose Farm Grease took us four years to develop. Passed every test, including wheel-bearing tests and water-leaching tests. Ask your Gulf dealer about Gulf All-Purpose Farm Grease.

Reminder: If barn flies make your cows switch and fuss just when you're trying to milk, Gulf Livestock Spray will get rid of those annoying insects in a few seconds. It's economical, too. Usual price only $1.49 a gallon.

2. Useful Tip for Tractor Owners.

You can save neck cramps by mounting a fair-size rear view mirror on your tractor lever handle, or some other likely spot. It's most helpful when you must watch your driving and the operation of the binder, plow or other implement at the same time.

3. Avoiding Electric Motor Repair Bills.



According to electrical men, electric motors are often ruined by *over-oiling*. Too much oil causes a churning action in the bearing, driving the hot oil along the shaft and spraying it into the motor.

Eventually, oil rots motor insulation. It also gathers carbon dust from the brushes in commutator-type machines, causing grounds and short-circuiting the segments.

Small amounts of Gulf Electric Motor Oil, used regularly, will help you avoid costly repair bills. Made by Gulf's own Alchlor Process, it's three times as viscous as ordinary "household oils." Comes in handy can with spout. 23¢ for 4-oz. size, 35¢ for 8-oz. size, at your Gulf dealer's.

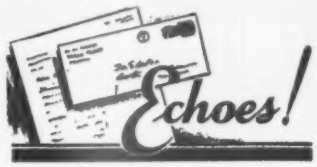
4. An Easy Way To Get Yourself Some 5-gallon Cans

Gulflube is a Multi-Sol processed oil, refined from the finest paraffin crudes. It's a mighty good oil to use in your car, tractor or stationary engine.

Next time you need motor oil try buying Gulflube in the new 5-gallon size. That way, you get a handy 5-gallon can that you can keep. A strong one that you can bang around plenty, too. Has tilted pouring spout, screw-on caps and wooden bail handle.

Next time you're in town, get this handy can at your Gulf dealer's.

GULF Farm Aids



Suggets One Improvement

I consider your judging pictorials very good, having used them in a vo-ag department where I previously taught. However, if I may, I should like to suggest one improvement. If just one animal was printed on a card, and several of these cards of the same class and breed were made up, it would make for greater flexibility in making up classes by the instructor. I realize, however, that this would involve more expense. *—Leon J. Warner, vo-ag instructor, Northwood, N. D.*

It would be a little difficult for us to print one animal on a card. Why not cut out the individual animals and paste them on cardboard?—Editor.

★

Agrees With Erickson

I heartily agree with Club Agent George E. Erickson in his philosophy and his attitude toward the relationship which should exist between 4-H club work and vo-ag boys.

Having had eight years' experience as a vo-ag teacher and 20 years as county agent without one single instance of friction in either capacity, in some measure qualifies one to say that there is no excuse or reason for friction between extension workers and vocational agriculture teachers. I will say that any friction or overlapping of their activities is due either to a lack of proper understanding of the functions of the two agencies, or to pettiness on the part of one or the other, or both.

Any extension worker worth his salt has a much larger field and a much bigger job than he can possibly handle if he provides the opportunity, enrolls, organizes and gives very meager training, information and instruction to all of those boys and girls of club age in his county who are not enrolled in vocational agricultural classes where they will have an opportunity to get intensive information and training in the vocation, which presumably they have chosen.

Extension workers will do a fine job if they will provide the young boys and girls with that inspiration which will cause them to seek that intensive training which was provided for by the Smith Lever Act. Let's all recognize the fact that we have a big job to do in our particular field, then concentrate our energies on that job, cooperatively and effectively with the other agencies in their field.—*D. B. Hendrix, county agent, Sevierville, Tenn.*

★

Of Great Value . . .

I wish to take this opportunity to express my appreciation for the wonderful service, and helpful magazine. I finished my first year of teaching vo-ag, and started a new department at the same time. There was no information or literature available,

When writing advertisers please mention *Better Farming Methods*

and your booklets and service have been of great value. Thanks again for your service department and magazine.—*James R. Brown, vo-ag teacher, Aztec, N.Mex.*

★

Requests Handled Courteously

We have used a good deal of the material from your magazine for class work and taken advantage of the visual aid information you have to offer. We find all requests we have made are taken care of in a fine, courteous manner. We wish to express our gratitude for your fine service.—*Edward H. Barbee, vo-ag instructor, Escalon, Calif.*

★

Best Issue

Thanks again for your Annual Directory Issue of Better Farming Methods. It is the best issue that I ever received and I have read them since 1928. Again, compliments to you!—*Lloyd H. Lebo, adviser, agricultural education, Lebanon, Pa.*

★

Coming Events

December 21-22—National Farm Electrification Conference, Stevens Hotel, Chicago, Ill.

January 3-5—Northwest Vegetable Insect Conference, Portland, Ore.

January 5-7—Northwest Spray Conference, Portland, Ore.

January 5-7—National Turkey Federation Convention, Minneapolis, Minn.

January 9-13—Pennsylvania Farm Show, Harrisburg, Pa.

January 13-21—National Western Stock Show, Denver, Colo.

January 18-22—Boston Poultry Exposition, Paul Ives, chairman, 30 Church St., New Haven, Conn.

January 30 — February 2 — Wisconsin Farm and Home Week, University of Wisconsin, Madison.

February 1-12—18th Annual Houston Fat Stock & Livestock Exposition, Sam Houston Coliseum, Houston, Tex.

February 9-11—47th Annual Meeting, Association of Southern Agricultural Workers, Biloxi, Miss.

March 4-12—National 4-H Week.

March 7—One week short course in Practical Management and Handling of Beef Cattle, Pennsylvania State College, State College.

March 13—One week short course in Dairy Farm Management, Pennsylvania State College, State College.

★

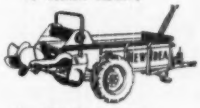
New Weed Research Division

The establishment of a new division for weed investigations in the Bureau of Plant Industry, Soils and Agricultural Engineering of the USDA, was announced December 6 by Robert M. Salter, chief of the bureau.

"We are deeply concerned about the tremendous drain of the weed menace on agriculture," Salter told weed specialists.

Basic to Sound Soil-Building
NEW IDEA Spreaders have big, easy-loading beds—built to withstand the impact of extra-heavy loads dropped by the loader . . . such as partially frozen chunks, large clods, etc.
NEW IDEA Spreaders are quickly readied for action, can be handled in close quarters; easy to turn short or back up, smoother rolling under all field conditions.
that's why a NEW IDEA is a good idea!

No. 12A Tractor Drawn
90 bushels capacity


No. 14A Tractor Drawn
60 bushels capacity

No. 10A Team or Tractor
70 bushels capacity

Lime spreading attachment available for all models

For its plant foods alone, manure is worth many dollars a ton to farmers. But it has another value, perhaps even greater and longer lasting. That is the definite addition it makes to the humus and tilth of soil. And it is because of these combined benefits . . . particularly the contribution to aggregate structure . . . that animal agriculture is so highly recommended by leading exponents of sound soil-building practices.

The resultant fast expansion in livestock population per farm means many more tons of manure to be handled every year. Spreader efficiency becomes increasingly a matter of dollars-and-cents concern to the farmer. This fact is sharply reflected in an ever mounting preference for NEW IDEA Spreaders — the thorough shredding, finer pulverization and even distribution, for which these famous NEW IDEA machines have never been equalled. Mail coupon for free descriptive literature.

Mail coupon today for free folders

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Dept. 643; Coldwater, Ohio
Send free illustrated folders on:
☐ Manure Spreaders
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☐ Hand Shellers
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Address _____

With the County Agents

NACAA OFFICERS
Executive Committee

Rex Carter.....President
Uniontown, Pennsylvania
Edwin Bay.....Vice-President
Springfield, Illinois
J. I. Wagoner.....Secretary and Treasurer
Greensboro, North Carolina
John Henry Logan.....
Member of Executive Committee
Clearwater, Florida

COUNTY AGENT SHERMAN HOAR, Sterling, Colo., is the chairman of the NACAA information committee and makes arrangements for the material that appears on this page.—Editor.

MANY COUNTY AGENTS are members of Epsilon Sigma Phi and will, therefore, be interested in the awards made by the fraternity at the annual meeting, held in connection with the American Association of Land-Grant Colleges and Universities at Kansas City. Epsilon Sigma Phi is the honorary society for agricultural extension workers who have served in cooperative extension work for 10 years or more. The distinguished service award of the organization for 1949 was presented to Harry C. Ramsower, director emeritus of extension, University of Ohio. The award was made at the annual banquet of the group at the Hotel President.

The group also announced other awards, including certificates at large to John D. Black, professor of economics, Harvard University; Mrs. Raymond Sayre, Ackworth, Ia., president, Associated Country Women of the World; and Walter H. Conway, assistant director, federal extension service.

Regional certificates of recognition for the eastern section went to William R. Cole, extension food technologist, University of Massachusetts; Paul R. Miller, acting dean and director, extension service, University of Vermont; and Louis R. Whitcomb, extension home management specialist, University of Delaware. For the north central states, George B. Crane, assistant director, extension service, Ohio State University; and Horace M. Hunt, county agent, Harrisonville, Mo. For the southern states, James Lawrence, county agent, Shawnee, Okla.; and Juanita H. Neely, state home demonstration agent, Winthrop College, Rock Hill, S. C. For the western states, Edwin R. Jackman, extension specialist, farm crops, Oregon State College; and Harriette E. Cushman, extension poultry specialist, Montana State College; and Francisco Joglar-Rodriguez, extension agronomist, University of Puerto Rico.

KANSAS COUNTY AGENTS elected their state association officers during the recent annual conference, held on the campus at Kansas State College, Manhattan. Heading the association is C. T. Hall, Olathe. "Tommy" is a past director of NACAA for the north central region, and succeeds George Gerber, Winfield, as president of the Kansas association. Other officers elected are H. J. Adams, Belleville, vice president; and Charles Hagemann, Hutchinson, secretary-treasurer. District directors include Harvey Goertz, Westmoreland and Hall, southwest district; and Evans Banbury, Goodland and Adams, northwest district.

REX CARTER, NACAA president, announces the appointment of additional committees to work for the national association during 1950. Four past presidents of NACAA compose the committee to study the constitution and by-laws and to make suggestions for revision. The four are Stuart Stirling, Silver City, N. Mex.; A. F. MacDougall, Concord, Mass.; C. C. Keller, Springfield, Mo.; and E. D. Beck, Laredo, Tex. Cletus Murphy, Waseca, Minn., will head a vocational education committee, and will be assisted by Harold J. Dedrick, Medford, Okla.; W. F. Coolidge, Pontiac, Ill.; Carl Worthley, Fort Kent, Me.; and Troy Lindley, Colfax, Wash.

Truman May, Edwardsville, Ill., is chairman of the 1950 convention committee, with Ed Bay, NACAA vice president, Springfield, Ill.; and Alvah Hecht, York, Neb., as members. This committee, and Rex Carter, met during the International Livestock Exposition in Chicago to further plans for the 1950 convention, and to check on dates.

F. H. SHUMAN, Whiteside county, Ill., makes a statement that shows what can be accomplished by a county agent when he works with and secures the cooperation of the various agencies in his county. Here is his statement: "I have never seen such beautiful pastures as those on the Everett Ege farm, one of the farms where the Farm Bureau-Farm Management tour was held. Fat cattle, painted buildings, contoured hillsides, new kitchen, and an airplane trip to California to a daughter's wedding are a far cry from 10-cent corn, a too-heavy debt load, and no money for clothing, education, or household plumbing. Yet, such a contrast exists. The beautiful, luscious pastures stand as an emblem to the research of the university, to the soil laboratory, to the credit agencies, to the soil conservation department, to the youth program, and to the initiative of this undefeated farmer."

PROPER FERTILIZATION and good cultural methods resulted in worthwhile yields for sweet potato demonstrators in Tipton county, Tenn., this year. County Agent W. G. McGowan carried on several demonstrations on sweet potato production, and one example of the results is the yield secured on the Tipton County Penal Farm. A field on one and three-quarters acres was fertilized on the basis of soil tests at the rate of 600 pounds per acre, with 6-6-8 fertilizer. Potato plants were set 12 inches apart. Farm Superintendent Delk sold $780 worth of potatoes at the field for $2 a bushel, with the buyer supplying the hampers. In addition, 60 bushels of No. 1's were put in storage, and there were 80 bushels of seed and cuts.

AN INTERESTING TRIP to Biloxi Miss., to attend the Mississippi annual extension conference and county agents' meeting is reported by NACAA President Rex Carter. Rex says they had a fine meeting, excellent reports, and an enthusiastic response to the suggestions passed on at the Denver convention. Rex also states that he had an opportunity to check on the 1951 convention site, and found the southern agents most enthusiastic about the possibilities of having the 1951 convention in the southern region.

IRA HOLLAR, county agent, Muskogee, Okla., tendered his resignation, effective November 15, to accept the appointment as 4-H club agent in Oklahoma. Ira has been a most active member of NACAA, having served as chairman of the youth committee for several years.

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Town_____ State_____

Ag Chemicals Directory

DEFOLIANTS

Defoliants are used primarily on cotton prior to harvest, in order to eliminate mature leaves and hasten boll ripening. As the number of cotton harvesting machines increases, so does the need for defoliation efficiency. Experimental work is now being done on the use of defoliants on soybeans.

AMMONIUM THIOCYANATE

ORTHO COTTON DEFOLIANT—California Spray-Chemical Corp., Richmond, Calif.
Mallinckrodt Chemical Works, 2nd & Mallinckrodt Sts., St. Louis, Mo.

CALCIUM CYANAMIDE

AERO CYANAMID—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
AERO CYANAMID—National Agricultural Supply Co., Ft. Atkinson, Wis.
CYANAMID—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

MONOSODIUM CYANAMIDE

AREO SODIUM CYANAMID, DUST—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
CYANAMID—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

DISINFECTANTS

BEE BRAND—General use, McCormick & Co., Inc., McCormick Bldg., Baltimore 2, Md.
CARBOLA—General use, Carbola Chemical Co., Inc., Natural Bridge, N. Y.
CEE DEE POWDER—General use, Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
CHLORINE LIQUID—General use, E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
CRESOL COMPOUND USP JANITOR—For hospitals, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
D & P PINE OIL—Deodorizer and general use, Doggett-Pfeil Co., Springfield, N. J.
F & B TERMITKIL—For killing termites, etc., Faesy & Besthoff, Inc., 220 E. 42nd St., New York, N. Y.
HTH-15—For poultry, Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.
DR. HESS DIP & DISINFECTANT—General use, Dr. Hess & Clark, Inc., 7th & Orange Sts., Ashland, O.
DR. HESS SOFENATE—General use, Dr. Hess & Clark, Inc., 7th & Orange Sts., Ashland, O.
KOPPERS COAL TAR—For cleaning and general use, Koppers Co., Inc., 350 Fifth Ave., New York, N. Y.
KOPPERS KOLEENER—For cutting grease and a cleaning agent, Koppers Co., Inc., 350 Fifth Ave., New York, N. Y.
KOPPERS PINE OIL—For cleaning and general use, Koppers Co., Inc., 350 Fifth Ave., New York, N. Y.
KREMULSO—For premises housing diseased animals, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
DR. LeGEAR'S DIP & DISINFECTANT—General use, Dr. L. D. LeGear Medicine Co., 4161 Beck Ave., St. Louis 16, Mo.
LO-BAX—For dairy sanitation, Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.
NOPCOCIDE K—For general use, Nopco Chemical Co., Harrison, N. J.
PINEY DISINFECTANT and PINE OIL DISINFECTANT—For public buildings, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
PURASAN AD—Use: germicide, Gallowhur Chemical Corp., 801 Second Ave., New York 17, N. Y.
PURASAN DC—Use: germicide, Gallowhur Chemical Corp., 801 Second Ave., New York 17, N. Y.
PURASAN OA—Use: bactericide and algaecide, Gallowhur Chemical Corp., 801 Second Ave., New York 17, N. Y.
RODALON—General use, Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
SANTOPHEN 1—General use, Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.
SEPTIGARD 25—Odorless quarternary, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
SWAN BRAND ANIMAL DIP—General use, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
SWAN BRAND HOSPITAL DISINFECTANT—General hospital use, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
THEATRE SPRAY—For theatres, Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

FERTILIZERS

AMMONIA (Anhydrous)

BARRETT STANDARD — Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
CSC—Commercial Solvents Corp., 17 E. 42nd St., New York 17, N. Y.
PHILLIPS 66—Phillips Chemical Co., Fertilizer Sales Div., Bartlesville, Okla.
SHELL AGRICULTURAL AMMONIA—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
SPENSOL—Spencer Chemical Co., Dwight Bldg., Kansas City 6, Mo.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

AMMONIA (Liquid)

PHILLIPS 66—Phillips Chemical Co., Fertilizer Sales Div., Bartlesville, Okla.
SHELL AQUA AMMONIA—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
SPENSOL—Spencer Chemical Co., Dwight Bldg., Kansas City 6, Mo.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

AMMONIUM NITRATE

AEROPRILLS—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
PHILLIPS 66—Phillips Chemical Co., Fertilizer Sales Div., Bartlesville, Okla.
SPENSOL—Spencer Chemical Co., Dwight Bldg., Kansas City 6, Mo.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

BORAX

BORAX TECHNICAL—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
PACIFIC BRAND—Pittsburgh Plate Glass Co., Columbia Chemical Div., Fifth Ave. at Bellefield, Pittsburgh 13, Pa.
F. M. SMITH—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
Pacific Coast Borax Co., 51 Madison Ave., New York 10, N. Y.

CALCIUM CYANAMIDE

AERO-CYANAMID—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.

FERTILIZERS-MIXED (Commercial)

AGRICO—American Agricultural Chemical Co., 50 Church St., New York 7, N. Y.
BEM BRAND—Thurston Chemical Co., Joplin, Mo.
EZ-MIN-EL—Tennessee Corp., Grant Bldg., Atlanta, Ga.
INTERNATIONAL—International Minerals & Chemical Corp., 20 N. Wacker Drive, Chicago 6, Ill.
LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
RED STEER—Swift & Co., Plant Food Div., Union Stockyards, Chicago, Ill.
RICH YIELD—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
TERRA FOOD FERTILIZER—Terra Food

Grow money-making crops with New Process RED STEER

It lowers production costs. Because New Process Red Steer furnishes a correct balance of growth elements, you'll get bigger, higher-grading yields. It helps produce crops that cost less to grow, that make you more money.

It feeds your crops better. This modern plant food is so blended and cured that the growth elements become available to the growing crop as needed. It gives a quick boost at the start; then feeds your crop progressively through the entire growing season.

It works better in your machines. New Process Red Steer flows evenly through modern power drills or old standbys without lumping, caking or bridging. Growth elements do not segregate in the drill. Packed in sturdy bags, it can be stored safely in dry places.

the growth elements are evenly mixed

Swift's New Process Red Steer is an exceptionally uniform plant food. So evenly blended that each plant gets the same proportion of growth elements. Every spoonful is the same as every bagful. It feeds all plants in your field evenly. Thus, each row or hill gets fed a correct balance of growth-making elements.

Think of this modern *better* plant food not as an expense, but as a profitable investment. *It will help you grow more from every acre you plant.* That's the best way to lower your costs of production and to earn more money with the crops you grow.

New Process Red Steer is made by Swift's exclusive new manufacturing method. Complete mechanical mixing followed by *complete chemical processing.*

Result—Red Steer is *uniform* in four important ways: 1) uniform blending, mixing, curing; 2) uniform freedom from caking, lumping, bridging; 3) uniform distribution through your machines; 4) uniform feeding of your crop.

No matter what crop you grow, or where you grow it . . . and that means your pasture and hay, too . . . Swift's Red Steer Plant Food will help you get better crops, bigger yields. It's a crop-maker that will earn money for you. Order your needs *early*, from your Authorized Swift Agent.

Swift's New Process RED STEER Plant Food

Buy Swift's Plant Foods at the sign of the RED STEER

Ask about *Blenn* & Brimm Swift's Specialized Crop Makers

Fertilizer Co., 3038 Lower Azusa Rd., El Monte, Calif.
V-C—Virginia Carolina Chemical Corp., 401 E. Main St., Richmond 8, Va.
VIGERO—Swift & Co., Plant Food Div., Union Stock Yards, Chicago, Ill.
8-8-4 (lakes and ponds)—Thompson Hayward Chemical Co., 2915 Southwest Blvd. Kansas City 8, Mo.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

MURIATE OF POTASH

BEM BRAND—Thurston Chemical Co., Joplin, Mo.
LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
POTTASSIUM CHLORIDE TECHNICAL—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
SUNSHINE STATE POTASH—U. S. Potash Co., 30 Rockefeller Plaza, New York, N. Y.
International Minerals & Chemical Corp., 20 N. Wacker Drive, Chicago 6, Ill.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

NITRATE OF SODA

ARCADIAN—Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

NUTRIENT FOLIAGE SPRAYS

SOLUBLE FERTILIZER VHPF—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
STAUFFER'S MIXTURES—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

PHOSPHATE ROCK

AERO-PHOS—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
AEROPHOS THOM-WARD—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
RUHM'S—Ruhm Phosphate and Chemical Co., 8 S. Michigan Ave., Chicago 3, Ill.
International Minerals & Chemical Corp., 20 N. Wacker Drive, Chicago 6, Ill.

SULFATE OF AMMONIA

LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
PHILLIPS 66—Phillips Chemical Co., Fertilizer Sales Div., Bartlesville, Okla.
SHELL AMMONIUM SULFATE—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
Barrett Div., Allied Chemical & Dye Corp., 40 Rector St. New York 6, N. Y.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

SULFATE OF POTASH

BEM BRAND—Thurston Chemical Co., Joplin, Mo.
LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
INTERNATIONAL—International Minerals & Chemical Corp., 20 N. Wacker Drive, Chicago 6, Ill.

SUPERPHOSPHATE

BEM BRAND—Thurston Chemical Co., Joplin, Mo.
LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
STAUFFER'S—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
V-C—Virginia Carolina Chemical Corp., 401 E. Main St., Richmond 8, Va.
18% NORMAL—American Agricultural Chemical Co., 50 church St., New York 7, N. Y.
47% and 20%—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
International Minerals & Chemical Corp., 20 N. Wacker Drive., Chicago 6, Ill.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

SUPERPHOSPHATE (Ammoniated)

BEM BRAND—Thurston Chemical Co., Joplin, Mo.
LIBERTY—Apothecaries Hall Co., Waterbury, Conn.
International Minerals & Chemical Corp., 20 N. Wacker Drive, Chicago 6, Ill.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

FUMIGANTS

GRAIN FUMIGANTS

● FARMERS ARE just becoming aware of the presence of insects in their farm-stored grain. As end-man on the chain of farmer to elevator to miller to baker, his responsibilities with regard to delivering insect-free grain to the elevator are now being impressed on him from all sides.

Fumigants toxic to insects are to some extent toxic to humans. A full face gas mask with organic vapor and acid gas canister is necessary for the proper safety to operators applying fumigants. For small jobs there are a number of inexpensive masks available from war-surplus stores that were issued during the war to air raid wardens. Never, under any circumstances, enter a bin under fumigation, unless an approved hose mask or oxygen breathing apparatus is available.

In general, fumigants may be applied to farm bins by pouring or coarse spraying over the surface of the grain. Make sure that the level of grain in the bins is no closer to the top of the bins than six inches. These mixtures have been designed, in theory, to travel downwards through the grain mass, penetrating into all spaces between kernels, killing as they go. Actually, the vapors will follow the line of least resistance. Consequently, grain in bins is best treated before it has had a chance to settle. Most farm grain, not being cleaned, contains a high percentage of dust, dockage chaff and similar materials. These absorb the fumigant materials more rapidly than the wheat.

The highest populations of insects build up in the top and bottom layers of a bin, hence the ethylene dibromide-propylene chloride mixture has been designed to take care of this condition. The ethylene dibromide takes care of the top-inhabiting insects and the propylene chloride and carrier (usually carbon tetrachloride) control the insects in the bottom layers.

Carbon tetrachloride is the least toxic to insects of the mixtures discussed, and is non-inflammable. This feature of non-inflammability with some toxicity, makes it the most common carrier of other materials.

Carbon bisulphide alone is highly inflammable and explosive. It is usually mixed one part with four parts of carbon tetrachloride for reduced fire hazard.

Chloropicrin is non-explosive, non-inflammable and extremely toxic to all stages of insects, infesting stored grain. It is irritating in low concentrations and, as such, is safe to use, because of this "tear-gas" effect. It is best applied to farm bins in the one-pound dispenser bottle or in pop bottles. These bottles are forced into the top surface of the bin, closed end first, and then over-turned under the surface and left in the grain surface. Being heavier than air, and evaporating slowly, the vapors travel throughout the grain mass. A mixture of chloropicrin (15 percent) and carbon tetrachloride has been found to be very effective in fumigating grain in emergency farm storage. This mixture is sprayed over the surface in a coarse spray at a rate of one to one and a half gallons per 1,000 bushels. A gas mask equipped with organic vapors and acid gases will be found necessary for this type of application, and is recommended for use with any of the above mixtures. Bucket-type sprayers, operated outside the bin are best for this application.

With the exception of carbon tetrachloride and the mixture of ethylene dichloride-carbon tetrachloride, the above mixtures may reduce germination if grain moisture is above 12 percent or exposures are excessive. In addition, wet grains require increases in fumigant dosage recommendations. If wet grain is stored any length of time in warmer weather, it may mold and spoil. Drying grains before storage is indicated—both for prevention or spoilage and sustained germination. As a precaution, set aside the seed required for future crops and mix well with DDT dust to prevent insect damage. Under no circumstances, allow this treated seed to be used for feed.

Again, farmers are under pressure from all sides to take measures to protect their grain from insect contamination. To date, grain fumigation is the only adequate measure available to the farmer.—Richard P. Porter and R. L. Brett.

CARBON BISULFIDE

WEEVILTOX—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
E. I. DuPont de Nemours & Co., Inc., Wilmington, Del.

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FERTILIZER CONSUMPTION (In short tons)

1935-1939	466,633	1944	1,310,300
1940	619,808	1945	1,587,301
1941	696,368	1946	2,153,620
1942	791,265	1947	2,506,272
1943	1,007,243	1948	3,092,289

* Indiana, Illinois, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Kansas, Missouri, Arkansas, Oklahoma.

Since the plant food most often lacking in midwestern soils is Nitrogen, Spencer Ammonium Nitrate Fertilizer (33.5-0-0) is assuming greater importance each crop year. Spencer agronomists constantly test Ammonium Nitrate—in all soils and on many types of crops, and their findings can mean extra profit dollars to you.

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SPENCER

Mallinckrodt Chemical Works, 2nd & Mallinckrodt Sts., St. Louis, Mo.
Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

CARBON TETRACHLORIDE (Mixture)

CYANOGAS—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
FUMIGANT NO. 3—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
WESTVACO GRAIN FUMIGANT NO. 3—Westvaco Chemical Div., Food Machinery & Chemical Corp., 405 Lexington Ave., New York 17, N. Y.
E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

ETHYLENE DIBROMIDE-ETHYLENE DICHLORIDE

DOWFUME EB-5—Dow Chemical Co., Midland, Mich.

ETHYLENE DICHLORIDE-CARBON TETRACHLORIDE

DIWEEVIL—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.
DOWFUME 75—Dow Chemical Co., Midland, Mich.
MILLERFUME—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
SWAN BRAND FUMIGANT NO. 1—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
WESTVACO GRAIN FUMIGANT NOS. 4 & 5—Westvaco Chemical Div. Food Machinery & Chemical Corp., 405 Lexington Ave., New York 17, N. Y.

SOIL FUMIGANTS

● SOILS ALL over the world are infested with nematodes, disease organisms, and insects which may be limiting factors in growing crops profitably. The tendency to specialize and intensify culture, and our increased knowledge of the biology of soils, has emphasized the importance of controlling soil-borne plant pests. This fact has led to the development of the field of soil fumigation.

Commercially available soil fumigants are, for the most part, liquids that are injected beneath the surface of the soil at depths ranging from three to nine inches. There they volatilize and pass between the soil particles in the vapor phase. An ideal soil fumigant should be volatile, inexpensive, easy to work with, and should not have deleterious effects on soils from repeated usage. There is much research presently under way, and it is probable that new and much improved fumigants will be forthcoming shortly.

Chloropicrin: This fumigant has better fungicidal properties than any other fumigant commercially available per unit weight. In addition, it has nemacidal, herbicidal, and insecticidal properties. It is used primarily to fumigate soils producing high cash value crops, such as greenhouse soils,

"It's just to humor Ma. She's crazy about this rooster."

hotbeds, coldframes, seedbeds, and flatting and potting soils. Costs run from one to one and a half cents per square foot and are comparable with steaming. Results also are comparable with steaming.

Methyl bromide and its mixtures: Methyl bromide, as a soil fumigant, was originally marketed dissolved in a carrier which varied with the manufacturer. These mixtures were for injection beneath the soil surface in the usual manner; however, one manufacturer recently developed a method to fumigate small areas by applying the gas above the surface of well-tilled soils beneath a gas-proof cover. Good results have been reported for control of nematodes, weeds and weed seeds, and soil-borne insects.

Methyl bromide fumigants have special application because of their extreme volatility and consequent quick aeration from soils, their good control of nematodes and soil-borne insects, and their low degree of phytotoxicity, making it possble to fumigate soils in the immediate proximity of growing plants.

Fumigants containing ethylene dibromide: Mixtures containing ethylene dibromide are designed for controlling nematodes, wireworms, and other soil-borne insects with special emphasis on mineral soils. They are inexpensive, and since they do not require any special type of seal, they are well adapted for large area application. The mixtures contain from five to 40 percent ethylene dibromide by volume, depending upon the manufacturer. The most commonly used mixtures contain either 10 or 20 percent toxicant by volume. Costs will approximate $30-$40 per acre, depending upon the amount of material required.

Fumigants containing dichloropropane and dichloropropene: These fumigants have been found to be excellent nemacides and insecticides, and do possess some limited fungicidal and herbicidal properties, although the latter are not important at ordinary dosages. These mixtures are being recommended particularly for use on organic soils and for specific cyst-forming nematodes. They do not require any special soil sealing and are comparable in

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TENNESSEE Atlanta, Georgia — TC TENNESSEE CORPORATION — CORPORATION Lockland, Ohio

cost with ethylene dibromide mixtures. They are used primarily for large-scale application for control of nematodes, wire worms, and other soil-borne insects.—Richard P. Porter and R. L. Brett.

CARBON TETRACHLORIDE (Mixture)

Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

CHLOROPICRIN

LARVACIDE (for grain also)—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.

DICHLOROPROPANE-DICHLOPROPENE (Mixture)

DOWFUME N—Dow Chemical Co., Midland, Mich.
NEMAFUME—Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles 23, Calif.
SHELL D-D—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.

ETHYLENE DIBROMIDE

BROMOFUME—Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles 23, Calif.
DOWFUME W-40 and W-85—Dow Chemical Co., Midland, Mich.
ISCOBROME D and D42—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.
SOILFUME CAPS and SOILFUME 60-40—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.
SOILFUME 60-40—Westvaco Chemical Div., Food Machinery & Chemical Corp., 405 Lexington Ave., New York 17, N. Y.
TERRAFUME 40—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

METHYL BROMIDE

MASTER BRAND—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.
PESTMASTER—Michigan Chemical Corp., St. Louis, Mich.
Dow Chemical Co., Midland, Mich.
Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles 23, Calif.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

METHYL BROMIDE-CHLOROPICRIN (Mixture)

DOWFUME MC-2—Dow Chemical Co., Midland, Mich.
PESTMASTER—Michigan Chemical Corp., St. Louis, Mich.
TESTMASTER—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.

NAPHTHALENE

POLAR—Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

NICOTINE

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
NICO-FUME PRESSURE FUMIGATOR and NICO-FUME LIQUID — Tobacco By-Products & Chemical Corp., 401 E. Main St., Richmond 8, Va.

FUNGICIDES

BORDEAUX MIXTURE

ACME—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.
BORDOW—Dow Chemical Co., Midland, Mich.
BOWKER'S—American Agricultural Chemical Co., 50 Church St., New York 7, N. Y.
COPPER HYDRO BORDO—Chipman Chemical Co., Bound Brook, N. J.
CORONA—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
ORCHARD BRAND & MECHLING'S—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
ORTHO (Powdered)—California Spray-Chemical Corp., Richmond, Calif.
SECURITY BRAND—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.
E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

COPPER CARBONATE

CORONA COPPER CARB—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.

COPPER OXIDES (Yellow)

BONCOP—Bonide Chemical Co., Utica, N. Y.
CCC-3-6 DUST—Carbola Chemical Co., Inc., Natural Bridge, N. Y.
YELLOW CUPROCIDE—Rohm & Haas Co., Philadelphia, Pa.

COPPER OXYCHLORIDES

CCC COPPER DUST—Carbola Chemical Co., Inc., Natural Bridge, N. Y.
C.O.C.S.—Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, O.
COPPER-A COMPOUND—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
COPROURE—Bonide Chemical Co., Utica, N. Y.
CUPRO-K—Rohm & Haas Co., Philadelphia 5, Pa.

COPPER SULFATES (Basic)

ACME KOPPER KING—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.
CORONA "53" and CORONA "26"—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
DUO-COPPER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
MICRO NU-COP—Faesy & Besthoff, Inc., 220 E. 42nd St., New York, N. Y.
NU-COP—Doggett-Pfeil Co., Springfield, N. J.
ORTHO ZINC COPPER FUNGICIDE and ZINC COPOSIL FUNGICIDE—California Spray-Chemical Corp., Richmond, Calif.
530 SPRAYCOP, 340 SPRAYCOP and 70 DUSCOP—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
TRIBASIC—Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, O.
TRIKOP—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

DICHLORONAPTHOQUINONE

NIAGARA PHYGON—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.
PHYGON XL, PHYGON ROSE DUST and PHYGON PASTE—Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

DINITRO COMPOUNDS

KRENITE 26—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
ORTAZOL—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 3, Md.

FERBAM (Ferric Dimethyl Dithiocarbamate)

COROMATE—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
DIMOLE—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.
FERMATE—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
FERRADOW—Dow Chemical Co., Midland, Mich.
NIAGARA CARBAMATE—Niagara Chemical Div., Food Machinery Corporation, Middleport, N. Y.
NU-LEAF BLACK FUNGICIDE—California Spray-Chemical Corp., Richmond, Calif.

GLYOXALIDINES

CRAG FRUIT FUNGICIDE 341C—Carbide & Carbon Chemicals Corp., Unit of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
FRUIT FUNGICIDE 341-C—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
PENCO FRUIT FUNGICIDE 341-C—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

LIME SULFUR (Dry)

ACME—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.
CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.
DOW—Dow Chemical Co., Midland, Mich.
NIAGARA—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.
ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
REX—Thompson Hayward Chemical Co.,

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LIME SULFUR (Liquid)

D & P—Doggett-Pfeil Co., Springfield, N. J.
MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
ORTHO LIME-SULFUR SOLUTION—California Spray-Chemical Corp., Richmond, Calif.
REX—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
SECURITY BRAND—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.
Dow Chemical Co., Midland, Mich.

MICRONIZED SULFUR

BONSUL—Bonide Chemical Co., Utica, N. Y.
CORONA (Dusting and Wettable)—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
D & P (Dusting)—Doggett-Pfeil Co., Springfield, N. J.
MICRO-DRITOMIC—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
MICRO-FLOTOX SULFURS—California Spray-Chemical Corp., Richmond, Calif.
MIKE—Dow Chemical Co., Midland, Mich.
SULFORON (Wettable)—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

NABAM (Disodium Ethylene Bis Dithiocarbamate)

DITHANE D-14—Rohm & Haas Co., Philadelphia 5, Pa.
PARZATE—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

PHENYL MERCURY COMPLEXES

MERSOLITES—Millmaster Chemical Corp., 420 Lexington Ave., New York 17, N. Y.
ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
PURATIZED APPLE SPRAY—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.
PURATIZED APPLE SPRAY and PURATURF—Gallowhur Chemical Corp., 801 Second Ave., New York 17, N. Y.
SEL-TOX—Nott Mfg. Co., Mt. Vernon, N. Y.
TAG FUNGICIDE NO. 331—California Spray-Chemical Corp., Richmond, Calif.
TAT SOILICIDE and TAT C-LECT FORTIFIED—O. E. Linck Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

SULFUR (Dusting)

ACME (Wettable)—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.
CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.
CORONA MICRONIZED—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
KROP-SAVER—Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.
MAGNETIC 90, OWL PERFECTION, SWAN and ELECTRIC—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
NIAGARA KOLODUST—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.
ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
ORTHO, FLOTOX and MICRO-FLOTOX—California Spray-Chemical Corp., Richmond, Calif.
SECURITY BRAND CONDITIONED—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

SULFUR (Flotation)

KOPPERS—California Spray-Chemical Corp., Richmond, Calif.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

SULFUR (Paste)

MAGNETIC "70"—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
MAGNETIC "70" CONCENTRATED—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

SULFUR (Wettable)

BONSUL—Bonide Chemical Co., Utica, N. Y.
CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.
CORONA MICRONIZED—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
D & P—Doggett-Pfeil Co., Springfield, N. J.
DRITOMIC—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
FLOTOX and MICRO-FLOTOX—California Spray-Chemical Corp., Richmond, Calif.
HY-TOX—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
KROP-SAVER—Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.
MAGNETIC 95, MAGNETIC SPRAY WETTABLE and CROWN—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
MIKE—Dow Chemical Co., Midland, Mich.
NIAGARA KOLOSPRAY—Niagara Chemical Div., Food Machinery Corp., Baltimore 31, Md.
NUTONEX—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

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DDT: Genitox* S-50 (50% DDT Spray Powder, micron particles)
Genitox Dust Bases (Highly concentrated, micro-fine)
Genicop* Spray Powder (25% DDT-75% Basic Copper Sulfate with spray conditioners, micron particles)
Genitol* EM-25 (25% DDT Emulsifiable—Formulations especially for potatoes, corn, etc.)
Technical Grades

BHC: Technical Grades, unmilled
Finely milled dust base concentrates
Wettable Concentrate

NICOTINE: Sulfate 40% (A leader among commercial growers)

PARATHION: Genithion† P-15 and P-25 (15% and 25% finely milled, wettable and dust base)

LEAD ARSENATE: Orchard Brand "Astringent" and Standard (Leaders among the nation's "leads")

CALCIUM ARSENATE: Especially made for high efficiency in spraying or dusting

COPPERS: "530" Spraycop* (53% Metallic Copper, for spraying or dust base)
Bordeaux Mixture (Ready prepared "Bordeaux" for spraying)

SULFURS: Micro-Dritomic* (95% Sulfur, wettable, micron sized particles. Especially for apples.)

SPREADER-STICKER: Filmfast* (To make sprays cover better, go further, last longer.)

Other Products: Specialized organic and inorganic insecticides, fungicides; hormone pre-harvest fruit sprays; other spray and dust mixtures.

†General Chemical Trade-Mark *Reg. U. S. Pat. Off.

ORCHARD BRAND SPRAYS & DUSTS

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ALLIED CHEMICAL & DYE CORPORATION
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Offices in Agricultural Centers from Coast to Coast

SULFORON X—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.

TETRACHLOROBENZOQUINONE

SPERGON, SPERGON-SL, SPERGON WETTABLE—Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

THIURAM DISULFIDES

TERSAN—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

ZINC AND COPPER CHROMATE MIXTURES

PENCO POTATO FUNGICIDE 658—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.
F-531—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
Niagara Chemical Div., Food Machinery Corp., Middleport. N. Y.

ZIRAM (Zinc Dimethyl Dithiocarbamate)

BON-ZER—Bonide Chemical Co., Utica, N. Y.
COROZATE—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
NIAGARA Z-C SPRAYS & DUSTS—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.
OPALATE WHITE FUNGICIDE—California Spray-Chemical Corp., Richmond, Calif.
ZERLATE—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

ZINEB (Zinc Ethylene Bis Dithiocarbamate)

DITHANE Z-78—Rohm & Haas Co., Philadelphia 5, Pa.
PARZATE—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

ZINC SULFATES (Basic)

FLAKE TECHNICAL—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York, N. Y.
ORTHO ZINC COPPER FUNGICIDE—California Spray-Chemical Corp., Richmond, Calif.

F and M Disease Film

USDA is making available a 16 mm., sound, colored movie entitled "Outbreak!" which is the story of Foot and Mouth disease. The film has a running time of 29 minutes.

This film is available on loan from extension services or visual aid departments in state agricultural colleges.

General Use of . . .

Fungicides–Insecticides

By D. E. H. FREAR
Agricultural Chemistry Department
Pennsylvania State College

● TO LIST all of the insects and plant diseases which are controlled by the various insecticides and fungicides would be impossible, unless unlimited space were available. Even so, the list would probably fill a good-sized book. About all that can be done in a limited space is to give the general uses of the materials, emphasizing the types of insects and fungi which are commonly encountered.

Insecticides and fungicides are sometimes classified into protective and eradicant types. The protective materials should be applied before the arrival of the pest to be controlled, and are thus on the spot, ready to kill the pest when it arrives and starts its destructive work. Among the insecticides, the so-called stomach poisons for leaf-eating insects and the residual insecticides like DDT are good examples of protective materials. Eradicant pesticides, on the other hand, are applied after the pests have become prevalent, and act to destroy the infestation already established.

Insecticides

THE ARSENICALS: Lead arsenate, calcium arsenate and paris green are typical examples or arsenicals in common use to destroy leaf- or fruit-eating insects. The codling moth on apples, the Colorado potato beetle and the boll weevil are examples of insects which are controlled by the arsenicals. In commercial use, the arsenicals are usually combined with fungicides, such as Bordeaux mixture or sulfur, and the mixture applied together in water suspension or as dusts. Because they break down to release soluble arsenic, the arsenicals may cause injury to certain crops: Paris green is the worst offender in this respect, while lead arsenate is usually considered the safest to use. These all function as stomach poisons, and, since they are poisonous to higher animals as well as insects, they should not be used on foods which are to be eaten soon after treatment.

THE FLUORINE COMPOUNDS. In this group are included **cryolite** (sodium fluoaluminate), **sodium fluosilicate** and **sodium fluoride.** The first two materials are used on fruits and vegetables. Cryolite and sodium fluosilicate function as stomach poisons, and are in general useful to control the same types of leaf-eating insects as the arsenicals. In addition, they have been used to kill the Mexican bean beetle, although a nonpoisonous material like rotenone is to be preferred. Sodium fluoride, being soluble in water, cannot be used as a spray, but its use is limited to the control of household insects, particularly cockroaches.

CONTACT INSECTICIDES. A variety of materials are applied directly to the insects to be controlled. **Pyrethrum** is used as the basis for many household insect sprays, and has the advantage of being relatively nontoxic. It is occasionally used in dusts to be applied to vegetables. **Nicotine,** although very poisonous, is the standard insecticide for soft-bodied insects, such as aphids. **Rotenone,** like pyrethrum, is harmless to higher animals, but is highly toxic to the Mexican bean beetle, pea aphids and many other agricultural pests. It can be used safely on food crops. **Ryania** and **Sabadilla,** also derived from plants, are useful for certain insects, the former being employed against the European corn borer.

Of the new synthetic organic insecticides, **Tetraethyl pyrophosphate (TEPP)** appears to act in much the same way as nicotine, and is used largely against soft-bodied insects. It is highly toxic to warm-blooded animals in the concentrated form, but breaks down quickly when applied as a water solution, so that there is little danger of poisonous residues. **Parathion,** which is related chemically to TEPP, is also a very poisonous material, and should be used with great care. It is toxic to many agricultural insects, and greenhouse and orchard mites in particular seem to be readily controlled by it.

Petroleum oil sprays have been used for many years to control orchard insects. **Dormant oils** are commonly used against the eggs of apple aphids, and in conjunction with **Dinitro compounds,** against red spider and related species. **Summer oils,** of lower viscosity and higher purity than the dormant oils, are applied as emulsions directly to growing trees and shrubs. Their principal use is on orchard trees and ornamentals, to control red spider, citrus scales, and pear psylla. Recently there have appeared on the market so-called "superior oils," which are mainly paraffinic in character. These are more efficient insecticides than the oils containing mainly the aromatic and naphthenic hydrocarbons. The dinitro compounds mentioned briefly above are used mainly as dormant sprays: they are effective as fungicides.

The synthetic organic insecticides are of recent origin, and appear to be extremely useful. DDT is toxic to many species of insects, including both agricultural and household species. Mosquitoes, silverfish, clothes moths, bedbugs, codling moths and Japanese beetles are only a few of the insects which are controlled effectively by this compound. It is commonly formulated as 5 percent oil solutions, 25 percent emulsion concentrates, 50 percent wettable powders, and dusts. A more highly purified grade is used in aerosols, and on certain sensitive plant species. Related to DDT chemically are TDE (DDD), which seems to be specific for certain leaf rollers, and

Methoxychlor, which is less toxic to higher animals than DDT. Methoxychlor is used on dairy animals and on certain food crops where it is desirable to avoid health hazards. It is effective against most of the same insects as DDT.

Benzene hexachloride (BHC) possesses a pronounced odor, and, although it is toxic to many insects, its use is limited for this reason. It should not be used on food crops: it is absorbed from the soil by root crops. Cotton insects are particularly susceptible to benzene hexachloride. Recently a highly purified form of the gamma isomer of BHC (which is the active constituent) has become available commercially. This is called **Lindane**, and it has no appreciable odor. It is used for household and agricultural insects, and is highly effective. It is formulated in the same way as DDT.

Chlordane is another chlorinated organic compound which is highly effective against household insects, particularly cockroaches and ants. **Toxaphene** appears to be less effective against these insects, but can be used against cotton and vegetable pests.

Orthodichlorobenzene is a liquid, and is used for the control of termites, while a closely related crystalline compound, **Paradichlorobenzene** has been used for many years to protect clothes from moths. **Tartar emetic** finds its principal use against thrips on flowers.

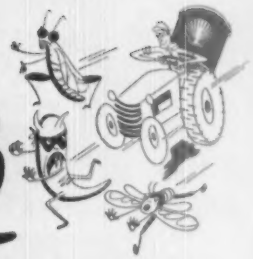
Mention should be made of cattle dips and sprays, which are usually based on DDT (for non-dairy animals) or some of the nontoxic substances, such as pyrethrum. Frequently pyrethrum sprays are fortified with **piperonyl butoxide** or **n-propyl isome**, which activate and fortify the pyrethrum.

Fungicides

COPPER COMPOUNDS. Many of our most widely used fungicides are compounds of copper. These are used as standard treatments against blights of vegetable crops, scabs of fruits, and certain seed-borne fungus diseases. **Bordeaux mixture** is made by mixing lime and copper sulfate in water. This is one of the most efficient copper fungicides, and is used in large quantities on potatoes and apples, as well as many other crops. The fixed copper compounds, **copper oxychloride, copper zeolites** and **basic copper sulfates** are used against the same fungi. **Copper carbonate** and **yellow cuprous oxide** are used for treating seeds, and the latter has some use as a plant protectant.

"I'm stuck! Must've hit an air pocket!"

How to use Chemicals



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RESITOXAPHENE 60: an emulsive concentrate containing toxaphene—for control of cotton insects, grasshoppers and many other insects.

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RESITOX D-25: an emulsive concentrate containing **DDT**—for effective control of many insects.

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VAPONA SPRAYS: very light, highly refined oils containing special toxicants for insect control on vegetable and field crops, shade and forest trees.

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AMMONIUM SULPHATE:** for broadcast field treatment.

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MASTER FARMER SPRAYERS

With All the Features:

- **Sprays 6 rows or 20 feet wide.**
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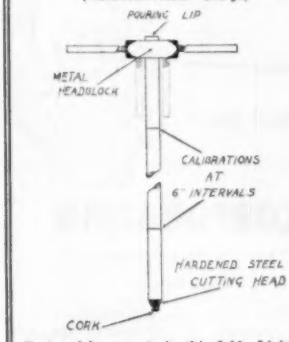
(Hankinson-Hester Design)



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Plastic vials (1½"x6¾") with screw caps can also be supplied for containing soil samples.

Write for descriptive literature

LaMOTTE CHEMICAL PRODUCTS CO.
Dept. "BFM" Towson 4, Md.

SULFUR AND ITS COMPOUNDS. Elemental sulfur, which is available in several forms, is used in large quantities, as a fungicide, especially against mildews and related diseases on fruits, ornamentals and greenhouse plants. **Wettable sulfur** is used for spraying, as are the **micronized, flotation** and **paste sulfurs.** The latter have smaller particle sizes, and the last two are considered safer to use on sensitive plants, such as peaches. **Lime sulfur,** either in the dry or liquid forms, is used mainly on fruit crops.

ORGANIC FUNGICIDES. Recently a number of new organic fungicides have come on the market. These include **Ferbam** (ferric dimethyl dithiocarbamate), **Ziram** (zinc dimethyl dithiocarbamate), **Nabam** (disodium ethylene bisdithiocarbamate), **Zineb** (zinc ethylene bisdithiocarbamate), and **Thiram** (tetramethylthiuram disulfide). Ferbam has rather wide fungicidal uses, on potatoes, tobacco seedbeds, etc., while the other materials appear to be somewhat more specific. Most of them are useful to control potato blights.

Dichloronaphthoquinone is used mainly as a seed protectant, as is **Tetrachlorobenzoquinone.** They control damping-off and other organisms which attack germinating seeds. **Phenyl mercury compounds** have been standard treatments in this same field, and are highly efficient.

The **Glyoxalidines,** one of the newest organic fungicides, appears to be specific for cherry diseases, particularly cherry leaf spot, but shows promise on other fruits as well. **Dinitro compounds,** mentioned as insecticides, are also useful as eradicant fungicides. They are used on fruits as dormant sprays, and have been applied as ground sprays to reduce the population of fungus organisms in the orchard.

Zinc and Copper Chromate Complexes find their greatest use on fine turf growing on golf greens. They serve to control dollar spot, snow mold and other diseases which attack bent grasses. Some related compounds are being used to control potato blight. Miscellaneous fungicides include **zinc sulfate,** which is useful when applied with lime, to control certain fruit diseases. This combination also serves to reduce arsenical injury when lead arsenate is applied to sensitive plants, such as peaches.

The field of pesticides is growing very rapidly, and new materials are introduced constantly. Although we have a number of excellent insecticides and fungicides, it is always possible to find new compounds which will be more efficient, and a great deal of research is being conducted to find new materials and new uses for existing substances.

Only general applications have been given in the preceding discussion. It is suggested that users read carefully the manufacturers' labels and literature, and consult with the local research and extension representatives for specific recommendations.

INSECTICIDES

BENZENE HEXACHLORIDE

AGICIDE TRIPLE-SIX "100," "300" and "1000"—Agicide, Inc., 1600 Junction Ave., Racine, Wis.

BENZAHEX—Chipman Chemical Co., Bound Brook, N. J.

BENZEX—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

COLO 44—Chemical Corp. of Colorado, West 12th & Quivas Sts., Denver, Colo.

CSC SIXIDE—Commercial Solvents Corp., 17 E. 42nd St., New York 17, N. Y.

ETHYL—Ethyl Corp., 405 Lexington Ave., New York 17, N. Y.

G SPRAY—Mackwin Co., Winona, Minn.

GAMTOX—California Spray-Chemical Corp., Richmond, Calif.

HEXADOW, WETTABLE and DUST CONCENTRATE—Dow Chemical Co., Midland, Mich.

HOG EEZ—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

LEXONE—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

NIAGARA BHC CROP SPRAY—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

PENCO BHC—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

PRENTOX—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N.Y.

STAUFFER'S TECHNICAL CONCENTRATES & MIXTURES—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

TRIVEX T, W-50 and G-9—Westvaco Chemical Div., Food Machinery & Chemical Corp., New York 17, N. Y.

National Agricultural Supply Co., Ft. Atkinson, Wis.

CALCIUM ARSENATE

AA QUALITY—American Agricultural Chemical Co., 50 Church St., New York 7, N. Y.

CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.

CORONA—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.

DOW—Dow Chemical Co., Midland, Mich.

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

NIAGARA—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

ORTHO—California Spray-Chemical Corp., Richmond, Calif.

PENCO—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

SECURITY BRAND—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

STAUFFER'S—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

CATTLE DIPS & SPRAYS

ATLAS—Chipman Chemical Co., Bound Brook, N. J.

Two Rohm & Haas chemicals help farmers boost yields through—

BETTER and SAFER

disease and insect control

TOMATO TESTS IN 15 STATES in 1948 showed DITHANE superior to other fungicides as to yields and control of defoliation. DITHANE controls late and early blight and anthracnose.

DITHANE

a product of Rohm and Haas agriculture research, is an organic fungicide that has proved effective against a wide range of diseases of vegetables and ornamentals.

But that is only half of the story. DITHANE protects plant tissue *without retarding growth*. This safety factor accounts for the higher yields and finer quality crops frequently resulting from the use of DITHANE sprays and dusts.

RHOTHANE

sometimes called DDD or TDE, excels as an insecticide for the control of the red-banded leaf roller on apples, the orange tortrix on cane berries and soft fruit, the tomato hornworm and the corn earworm.

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How To Use and Apply Chlordane

Pest	*Rate and Method of Application*	*Remarks*
Grasshoppers	Apply to foliage, three fourths to one pound of actual chlordane per acre regardless of the volume of water or diluent employed: 1 quart, 45-47 percent emulsifiable concentrate per acre. 20 lbs., 5 percent dust per acre. 2 lbs., 50 percent wettable powder per acre.	One application is usually sufficient but infested areas should be watched and retreated if necessary. Grasshoppers may be economically controlled in waste land before they move to crops of economic value.
Ants	Treat infested areas with one pound of actual chlordane per acre regardless of the volume of water or diluent employed (same as for grasshoppers)—2 percent oil solution for household use. Has been especially effective against both the Imported Fire Ant and the American Lawn Ant. For individual hill treatment introduce a 0.25 percent emulsion or 5 percent dust into the main gallery.	Large area treatments probably can be made best with the 5 percent dust and 50 percent wettable powder; inside homes and buildings the 2 percent oil solution or the emulsifiable concentrate are convenient. Spray nesting sites and runways, spray the infested areas and surfaces over which the ants are crawling, especially door jambs and window sills.
Japanese Beetle Grubs, White Grubs, and Wireworms	Apply chlordane to the infested soil at the rate of from 2-5 lbs. of actual chlordane per acre. For maximum residual action 10 lbs. actual chlordane per acre can be safely used. One application of chlordane to the soil surface may be disked in before seeding or transplanting. When applied to the soil surface, apply before a rain or wash into soil artificially. 2-5 quarts 45-47 emulsifiable concentrate per acre. 4-10 lbs. 50 percent wettable powder per acre. 40-100 lbs. 5 percent dust per acre.	Very effective for the control of beetle grubs in lawns and other turf areas. Does not impart objectionable odors to plant products grown in treated soil. At rates of up to 10 lbs. per acre chlordane has no noticeable effect on common grasses, particularly those grown on lawns or golf courses, spring ryegrass, soybeans, hybrid corn, evergreen nursery stock or most garden vegetables. One treatment of chlordane (at the rate of 5 lbs. per acre) will remain effective for at least two years.
Roaches, Spiders, and Silverfish	Chlordane, as either a liquid or powder formulation, should be applied to cracks, crevices, niches, and spaces in walls, furniture and equipment where roaches harbor and multiply. If possible, use a coarse wetting spray nozzle or a fine stream nozzle; thorough application with a machinist's oil can or a small paint brush has proved quite satisfactory 2 percent chlordane by weight in deodorized base oil or as a water emulsion. 2-5 percent chlordane by weight as a powder. Apply at the rate of 1 gal. per 1000 square feet or 1000 lineal feet as in the case of treating cracks and crevices. Treated areas should be thoroughly wetted.	Complete eradication of roaches has been attained with the use of chlordane. The film of chlordane left after application remains insecticidally active for many weeks in protected situations. Treatment may be repeated once a month if necessary. Dishes and food may be removed from closets and cabinets, replacing them as soon as the spray has dried.
Houseflies, Hornflies, and Stable flies	These flies are controlled from two to three weeks by spraying barns, sheds, stables and other resting places with a 0.5 percent chlordane emulsion or suspension. 4 quarts 45-47 percent emulsifiable concentrate or 8 lbs. of 50 percent wettable powder per 100 gallons of water	The federal government has suggested the use of chlordane as an alternate insecticide for the control of houseflies in areas where DDT fails to perform satisfactorily. Chlordane is not repellent to flies. Do not use on dairy animals or as a spray in dairy barns. Follow sanitation practices, especially in the disposal of manure and other materials in which flies breed. A residual spray of chlordane can be applied effectively to places outside the dairy barns where flies concentrate and on the outside walls of dairy barns, on fences, in hog pens, calf barns, stables, poultry houses, on garbage cans and similar places. Avoid using chlordane as an overall interior spray in houses.
Lice and Ticks on beef cattle, hogs, horses, goats and sheep	Spray animals thoroughly, using a solution containing 0.5 percent actual chlordane by weight. Either an emulsifiable concentrate or a wettable powder should be used. Where a small number of animals is involved, a thorough dusting with a powder containing 5 percent actual chlordane will effect control.	The use of an "underline" attachment for power spraying results in better wetting down of the necks, brakets and between the front and hind legs.
Sarcoptic Mange on swine, dogs, goats, beef cattle, sheep and horses	Thoroughly spray with or dip the animal into an emulsion or wettable powder suspension containing 0.5 percent actual chlordane. Contaminated premises should be thoroughly sprayed at the same time with the same spray.	One treatment is usually sufficient but if new infestations should develop, a retreatment should be made.
Mosquitoes	Best results are obtained by applying a spray containing 2 percent of actual chlordane by weight to screens, walls and other places where the insects alight.	Either an oil solution or water emulsion may be used.
Boll Weevil	Apply chlordane as a 10 percent dust at the rate of 1-1½ lbs. of actual chlordane per acre.	First applications should be made when 20 percent of the squares are punctured and at 5 day intervals as the infestation warrants.
Clothes Moths and Carpet Beetles	Using either a 2 percent chlordane oil solution or water emulsion, spray lightly but thoroughly all surfaces of fabrics to be protected, especially folds and seams. For carpet beetles, thoroughly spray the back side of rugs and crevices in the floor.	Inner surfaces of closets and storage cabinets should also be treated.
Plum Curculio	Chlordane, at the rate of 1 lb. of actual material per 100 gallons of water or as a 5 percent dust, has been successfully incorporated into spraying and dusting schedules for the control of this insect in peach and apricot orchards.	Include in cover sprays or dusts from the time the shucks are just breaking to and including those applications made one month before harvest.
Poultry Parasites	For lice, sprinkle 2 pounds of a 5 percent chlordane dust on each 100 square feet of floor space; treatment of individual birds with a 5 percent dust can also be made but is not necessary if litter treatment is used. For fowl ticks (bluebugs), bedbugs, poultry mites and southern chicken fleas, apply a 2 percent chlordane oil solution or water emulsion spray to such places as the floor, walls, yards, roost trees, nest boxes and dropping boards.	No objectionable odor or flavor has been detected by taste tests on both the meat and eggs from chlordane-treated birds. Young chicks under four weeks old should not be individually treated. Chlordane oil solutions and water emulsion sprays should be allowed to dry before the fowls go to roost

BONIDE SPRAY—Bonide Chemical Co., Utica, N. Y.

COLO 44—Chemical Corp. of Colorado, West 12th & Quivas Sts., Denver, Colo.

CORONA CATTLE DUST—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.

DUPONT LIVESTOCK SPRAY & DIP NO. 30 and DAIRY CATTLE SPRAY WETTABLE POWDER—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

GULF LIVESTOCK SPRAY—Gulf Oil Corp., Gulf Bldg., Pittsburgh 30, Pa.

DR. LEGEAR'S DIP & DISINFECTANT and ANIMAL & BARN SPRAY—Dr. L. D. LeGear Medicine Co., 4161 Beck Ave., St. Louis 16, Mo.

NIAGARA BHC SPRAY or DIP and NIAGARA NIATOX 50 WETTABLE SPRAY or DIP—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

ORCHARD BRAND—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

ORTHO R-S POWDER NO. 25-34 and BOTANO-R SPRAY—California Spray-Chemical Corp., Richmond, Calif.

PENCO CATTLE SPRAY—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

STAUFFER'S STOCK DIP—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

National Agricultural Supply Co., Ft. Atkinson, Wis.

CHLORDANE

ACME 6% DUST—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.

ACP—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.

ANT-X-POWDER—Nott Mfg. Co., Mt. Vernon, N. Y.

BIG FIVE ROACH KILLER—Woolfolk Chemical Work, Ltd., Ft. Valley, Ga.

BONCLOR—Bonide Chemical Co., Utica, N. Y.

CHECKPEST—Wood-Treating Chemicals Co., 5137 Southwest Ave., St. Louis 10, Mo.

CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.

COLO 44—Chemical Corp. of Colorado, West 12th & Quivas Sts., Denver, Colo.

CORODANE 5% DUST—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.

DAPCHLORDANE—Doggett-Pfeil Co., Springfield, N. J.

DOWKLOR 40% WETTABLE, 40% EMULSIFIABLE, 5% DUST—Dow Chemical Co., Midland, Mich.

KROP-SAVER CHLOROCIDE—Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.

MACKODANE—Mackwin Co., Winona, Minn.

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

NIAGARA CHLORKIL 72 MISCIBLE, NIAGARA CHLORKIL 40 SPRAY and NIAGARA CHLORKIL 5 DUST—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

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PRENTOX 20% OIL SOLUBLE—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N. Y.
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KRYOCIDE—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.
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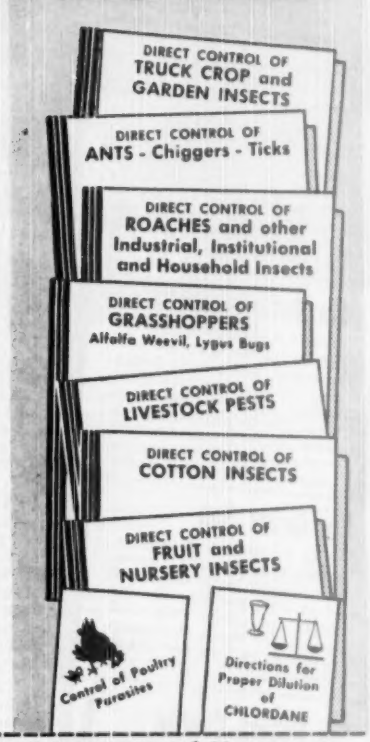

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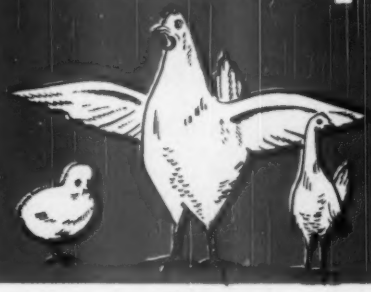

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OUTSTANDING POULTRY AUTHORITIES have published the following scientific reports on THE EFFECTIVENESS OF SULFAQUINOXALINE:

1. "Sulfaquinoxaline in the control of Eimeria tenella and Eimeria necatrix in chickens on a Commercial Broiler Farm," by L. C. Grumbles, J. P. Delaplane, and T. C. Higgins, Science 107:196, Feb. 20, 1948.
2. "The Effect of Sulfaquinoxaline Medication on Eimeria tenella Infection in Chickens," by E. H. Peterson, Am. J. Vet. Res. 9:77, January 1948.
3. "Sulfaquinoxaline in the Prevention of Eimeria tenella Infections in Chickens," by J. P. Delaplane, R. M. Batchelder, and T. C. Higgins, North Am. Vet. 28:19, January 1947.
4. "Sulfaquinoxaline in the Prevention of Eimeria necatrix Infection in Chickens," by L. C. Grumbles and J. P. Delaplane, Proc. 51st Ann. Meet. U. S. Livestock San. A., 285-289, December 1947.
5. "Immunity Studies on Eimeria tenella Infection in Chickens in Relation to Sulfaquinoxaline Therapy," by L. C. Grumbles, J. P. Delaplane, and T. C. Higgins, Poultry Sci. 27:169, March 1948.

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How to Use and Apply Methoxychlor

HOST	INSECT	SPRAY 50% Methoxychlor in Water	DUST 50% Methoxychlor	REMARKS Apply According to Local Experiment Station Recommendations
LIVESTOCK:				
Beef Cattle Dairy Cattle Hogs Sheep	Horn Flies, Lice, Fleas, Sheep Ticks	8-30 lbs. per 100 gallons (spray or dip) or ½-1½ cups per gallon		Use at least two quarts per animal for thorough wetting. Cover back, belly, flanks, udder, legs, neck and head. One application will last two weeks, or longer, depending on conditions. Sprays containing 50% Methoxychlor are particularly recommended for use on dairy cattle and meat animals.
FIELD CROPS:				
Alfalfa	Leafhoppers, Lygus Bug (Nymphs), Alfalfa Weevil, Alfalfa Looper, Alfalfa Caterpillar	2-3 lbs. per 100 gallons	10-20	Usually at least two applications at intervals of one to two weeks are necessary. 50% Methoxychlor applications may be continued close to harvest time or grazing periods on crops used for food, feed or forage. Apply dust on alfalfa at 25 to 40 lbs per acre, depending on density of foliage.
Corn	Earworm	2-3 lbs. per 100 gallons	10	
Cotton	Boll Weevil, Boll Worms		10-20	
Cow Peas	Pea Weevil	2-3 lbs. per 100 gallons	10	
Mint	Flea Beetles		10	
Mushrooms	Mushroom Flies		10	
Peanuts	Velvet Bean Caterpillar,	2-3 lbs. per 100 gallons	10	
Soybeans	Mexican Bean Beetle, Leafhoppers (various), Flea Beetles, Japanese Beetle, Corn Earworm, Soybean Caterpillar, Velvet Bean Caterpillar, Acrea Moth Larva, Fall Armyworm	2-3 lbs. per 100 gallons	10-15	
Sugar Beets	Webworm		10	
FRUIT:				
Apples	Codling Moth, Oyster Shell Scale (crawlers), Japanese Beetle	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	10	Two or more applications at intervals of one to two weeks are usually recommended. Applications may be continued close to harvest time.
Blueberries	Fruit Worm	2 lbs. per 100 gallons or 5 teaspoons per gallon		
Cherries	Fruit Worm, Fruit Fly	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	10	
Cranberries and Gooseberries	Yellow-Headed Fireworm, Black-Headed Fireworm, Leafhoppers, Fruit Worm, Fireworms, Tip Worm, San Jose' Scale (crawlers)	2 lbs. per 100 gallons or 5 teaspoons per gallon	10	
Grapes	Japanese Beetle, Grape Leaf Skeletoniser	2 lbs. per 100 gallons or 5 teaspoons per gallon	10	
Peaches	Japanese Beetle, Oriental Fruit Moth, Plum Curculio, 12-Spotted Cucumber Beetle	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	10	
Raspberries and Blackberries	Japanese Beetle, Orange Tortrix	2 lbs. per 100 gallons or 5-8 teaspoons per gallon	10-16	
VEGETABLES:				
Asparagus	Asparagus Beetle	2-3 lbs. per 100 gallons or 8 teaspoons per gallon	10	Usually two or more applications at intervals of one to two weeks are necessary. More frequent applications, if necessitated by unusual conditions, will not injure any of these vegetables. For control of Mexican Bean Beetle with dust, use at least 30 lbs. of 5% Methoxychlor dust per acre. Leafhoppers need only 3% Methoxychlor at 30 to 50 lbs. per acre. Up to 4 lbs. of 50% Methoxychlor per 100 gallons may be necessary to control imported cross-striped cabbage worm on broccoli. Concentrations may have to be increased if aphids are present. 50% Methoxychlor applications may be continued close to harvest time.
Beans (Lima & Snap)	Mexican Bean Beetle, Mealy Bug, Corn Earworm, Bean White Fly, Leafhoppers, Bean Pod Borer, Salt Marsh Caterpillar	2-3 lbs. per 100 gallons or 8 teaspoons per gallon	10-15	
Beets	Flea Beetles, Leafhoppers		10	
Broccoli and Cabbage	Cabbage Looper, Cross-Striped Cabbage Worm, Diamond-Back Moth, Imported Cabbage Worm, Flea Beetles, Cutworm	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	6-10	
Carrots	Leafhoppers	2-3 lbs. per 100 gallons	10	
Cucurbits (Cucumbers) (Melons) (Squash)	Cucumber Beetles (various), Squash Bug, Leafhoppers, Melon Worm, Flea Beetles, Squash Vine Borer, Pickle Worm, Lygus Bug (nymphs) Acrea Moth, Thrips	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	6-12	
Eggplant	Blister Beetles, Flea Beetles, Colorado Potato Beetle	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	10	
Lettuce	Leafhoppers	3 lbs. per 100 gallons or 8 teaspoons per gallon	10	
Peas and Cowpeas	Pea Weevil	2-3 lbs. per 100 gallons	10	
Peppers	Pepper Weevil	2-3 lbs. per 100 gallons	10	
Potatoes	Leafhoppers, Flea Beetles, Colorado Potato Beetle, Potato Tuber Moth Larva	2-3 lbs. per 100 gallons	10	
Tomatoes	Hornworm, Flea Beetles, Leafhoppers, Fruit Worm, Potato Tuber Moth Larva, Armyworms, Blister Beetles	2-3 lbs. per 100 gallons or 5-8 teaspoons per gallon	10-20	
Turnips	Flea Beetles	2-3 lbs. per 100 gallons	10	

CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.
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National Agricultural Supply Co., Ft. Atkinson, Wis.

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BLACK LEAF 40—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.
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A 2 day flock treatment for Large Round Worms and Cecal Worms. Simply mix with the feed and birds worm themselves. Does not interfere with laying.

DR. LEGEAR'S FLY SPRAY

Especially recommended for milk cows and dairy barns. Made according to an approved formula. Does not contain DDT and is not carried over into the milk. Contains Pyrethrum and Piperonyl Butoxide.

Write for complete facts on these important farm profit aids.

DR. LEGEAR MEDICINE COMPANY
ST. LOUIS 16, MO.

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Accurate, Durable and Complete for Terracing, Ditching, Irrigating, Tile Draining, Grading, Running Lines, Turning Angles and etc.

The Bostrom is used and endorsed by Schools, Extension Service & Individual Landowners everywhere.

Anyone can operate a BOSTROM Level by following the simple direction booklet included with each Instrument. We manufacture 3 models: Farm Level, Contractors Level, Convertible Level. All BOSTROM Levels are sold on the guarantee of satisfaction or money back. WRITE TODAY for literature, prices and name of our distributor near you.

Bostrom-Brady Manufacturing Co.
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SOLVAY—Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
TRITOX WAX—Tritox Chemical Co., Washington, Ind.
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PARATHION

ACME APHA-MITE—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.

How to Use and Apply Tetraethyl Pyrophosphate

Insect	*Formulation*	*Rate and Method of Application*	*Remarks*
Aphis	20% Liquid	¼ to ½ pint to 100 gallons water.	On fruit trees, field crops, nursery and greenhouse plants. Use promptly on dilution.
	40% Liquid	2 tablespoonfuls to 10 gallons water.	Tobacco plant beds. Spray buds thoroughly. 3 to 5 gallons diluted spray per 100 sq. yds.
		4 tablespoonfuls to 10 gallons water.	Tobacco fields. Spray buds thoroughly. 50 gallons diluted spray per acre on young plants. 75 to 100 gallons spray per acre on older plants.
	0.75 Dust	35 to 50 lbs. per acre.	Fruit trees and field crops. Depending on crop and severity of infestation.
	1.00% Dust	50 lbs. per acre if helicopter is used. 35 to 45 lbs. per acre if ground duster is used.	Orchards: Start treatment just as soon as pests appear. Repeat at 10 day intervals.
		35 to 50 lbs. per acre.	Fruit trees and field crops. Depending on severity of infestation.
		35 lbs. per acre.	Greenhouses. Do not apply to wet plants under glass.
Leafhopper Nymphs	20% Liquid	¼ to ½ pint to 100 gallons.	Fruit trees, field crops, nursery and greenhouse plants. Use promptly after dilution.
	0.75% Dust	35 to 50 lbs. per acre.	Fruit trees, field crops. Depending on crop and severity of infestation.
	1.00% Dust	35 to 50 lbs. per acre.	Fruit trees and field crops. Depending on severity of infestation.
Red Spider	20% Liquid	¼ to ½ pint to 100 gallons water.	Fruit trees, field crops, nursery and greenhouse plants. Use promptly after dilution.
	0.75% Dust	35 to 50 lbs. per acre.	Fruit trees, field crops. Depending on crop and severity of infestation.
	1.00% Dust	50 lbs. per acre when applied by helicopter. 35 to 45 lbs. per acre when applied by ground duster.	Orchards. Start treatment as soon as insects appear. Repeat at 10 day intervals.
		35 to 50 lbs. per acre.	Fruit trees and field crops. Depending on severity of infestation.
		35 lbs. per acre.	Greenhouses. Do not apply dust to wet plants under glass.
Thrips	20% Liquid	¼ to ½ pint to 100 gallons water.	Fruit trees, field crops, nursery and greenhouse plants. Use promptly after dilution.
	0.75% Dust	35 to 50 lbs. per acre.	Fruit trees and field crops. Depending on crop and severity of infestation.
	1.00% Dust	35 to 50 lbs. per acre.	Fruit trees and field crops. Depending on crop and severity of infestation.
Caterpillars 1st and 2nd Instar	1.00% Dust	35 lbs. per acre.	Cole crops.

CSC ANNOUNCES

AN ENTIRELY NEW TYPE OF INSECTICIDE

DERIVED FROM THE NITROPARAFFINS

DILAN

25 EM

LOW DOSAGE—HIGH KILL

NO OFF-FLAVOR OR ODOR

HIGH RESIDUAL VALUE

OUTSTANDING EFFECTIVENESS against certain insect pests of Bean, Potato, Cabbage, Tomato, Peach, Plum, Cherry, Field, and General Garden Crops

WRITE CSC TODAY FOR A SAMPLE AND IMPORTANT ADDITIONAL DATA

AVAILABLE AS A 25% EMULSIFIABLE SOLUTION
in 5-gallon and 54-gallon metal drums

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COROTHION—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
DAPTHION—Doggett-Pfeil Co., Springfield, N. J.
DOW (15% wettable)—Dow Chemical Co., Midland, Mich.
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ISCOMIST—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.
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NIAGARA PHOSKIL SPRAYS and DUSTS—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.
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PEST MASTER—Michigan Chemical Corp., St. Louis, Mich.
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STAUFFER'S CONCENTRATES and MIXTURES—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
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VAPOPHOS INSECTICIDES—California Spray-Chemical Corp., Richmond, Calif.
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PIPERONYL BUTOXIDE

ARFAX QB, SB and KB—Fairfield Labs., Inc., 417 Cleveland Ave., Plainfield, N. J.
COLO 44—Chemical Corp. of Colorado, West 12th & Quivas Sts., Denver, Colo.
FLY-TOX—Rex Research Corp., 600 Montrose Ave., Toledo, O.
DR. LEGEAR'S FLY SPRAY—Dr. L. D. LeGear Medicine Co., 4161 Beck Ave., St. Louis 16, Mo.
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PYRENONE (Intermediates, combining piperonyl butoxide with pyrethrum, available as oil concentrates, impregnated dust bases, emulsifiable concentrates and wettable powders; non-toxic to warm-blooded animals)—U. S. Industrial Chemicals, Inc., 60 E. 42nd St., New York 17, N. Y.
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KROP-SAVER DUST NO. 10—Crop Saver

Assure Rain in '50
with a
HALE Irrigation Unit

Above—This 4 lb. bunch of celery came from celery field at right, irrigated by an 800 GPM Hale Type CFIR.

Now is the time for farmers to get together with their dealers on a Hale irrigation pumping unit for '50 . . . don't wait till crops start to "burn up"! Assure rain when it's needed . . . increase yield, multiply profits. HALE Centrifugal Pumping Units are now available for irrigating areas from 1 to 100 acres and up.

Table at right lists Hale Units designed for use with overhead, underground or portable irrigation systems.

For Push-Button Rain!

- **Type CIR 1250 GPM at 100 lbs.**
- **Type CFIR 800 GPM at 100 lbs.**
- **Type *DFIR 800 GPM at 60 lbs. (*DFIR is Diesel-Driven)**
- **Type W 300 GPM at 78 lbs.**
- **Type FZ, 150 GPM at 50 lbs. Portable In frame; on skids; or on two wheels.**
- **Type NP, Self-priming portable, 15 GPM at 40 lbs.**
- **Type ENP, 90 GPM at 21 lbs.; Electrically driven**

NOTE: Units come skid or trailer-mounted, except FZ, NP and ENP.

Write for detailed information . . . state size of area and water source available.

HALE FIRE PUMP COMPANY Conshohocken, Pa.

The success story shown here is further proof that the Pillsbury's Best emblem on a bag of feed stands for highest quality ingredients, formulated as a result of extensive and ever-continuing nutritional research.

CONGRATULATIONS!

Schmidt Bros.

AND ALL OTHER PILLSBURY FEEDERS FOR THEIR FINE SHOWING AT THE INTERNATIONAL

GRAND CHAMPION LOAD of the 1949 INTERNATIONAL

Fed and Exhibited by Ferd and George Schmidt, Delmar, Iowa

In the photo, left to right: Ferd Schmidt, George Schmidt

Pillsbury's Best for Beef Cattle Feeding

Calf Starter
Recommended for range calves, to get them started quickly. Excellent for home-raised calves. Supplements dam's milk; weans them without a murmur. Saves the "baby fat." Many find it best to feed it all the way—at least to six months.

Steer Concentrate
Balances home grains and roughage. Palatable, efficient. Recommended as the means of getting the most out of your corn, for good gains, fast growth and excellent finish.

Range Ration
Built to give an extra boost and extra nourishment to range cattle. Fed to supplement grass. Contains vitamin D, frequently needed by range cattle, the needed variety of proteins and grain, and a special mineral balance to meet local needs.

Range Concentrate
Ideal for range feeding where grain is available. Supplements the nutrients of grass and grain—for growth, vigor, better breeding, and appetite appeal. Highly fortified with vitamins A and D, and a special mineral balance.

Pillsbury's Best Feeds included in the ration of all Schmidt Bros. cattle

It was a grand show—and an added pleasure to know that Pillsbury feeds contributed in a measure to the triumphs of Ferd and George Schmidt. Our heartiest congratulations to them!

Schmidt Bros. cattle, including the Grand Champion load, were started on Pillsbury's Best Calf Starter and then switched to Pillsbury's Best Steer Concentrate as a part of their finishing ration.

This applies to all of the more than 400 head that have come from Schmidt feed lots this year to make history—in the show and in the market.

The record confirms the skill and wisdom of their management and feeding, the six loads of Angus placing as follows:

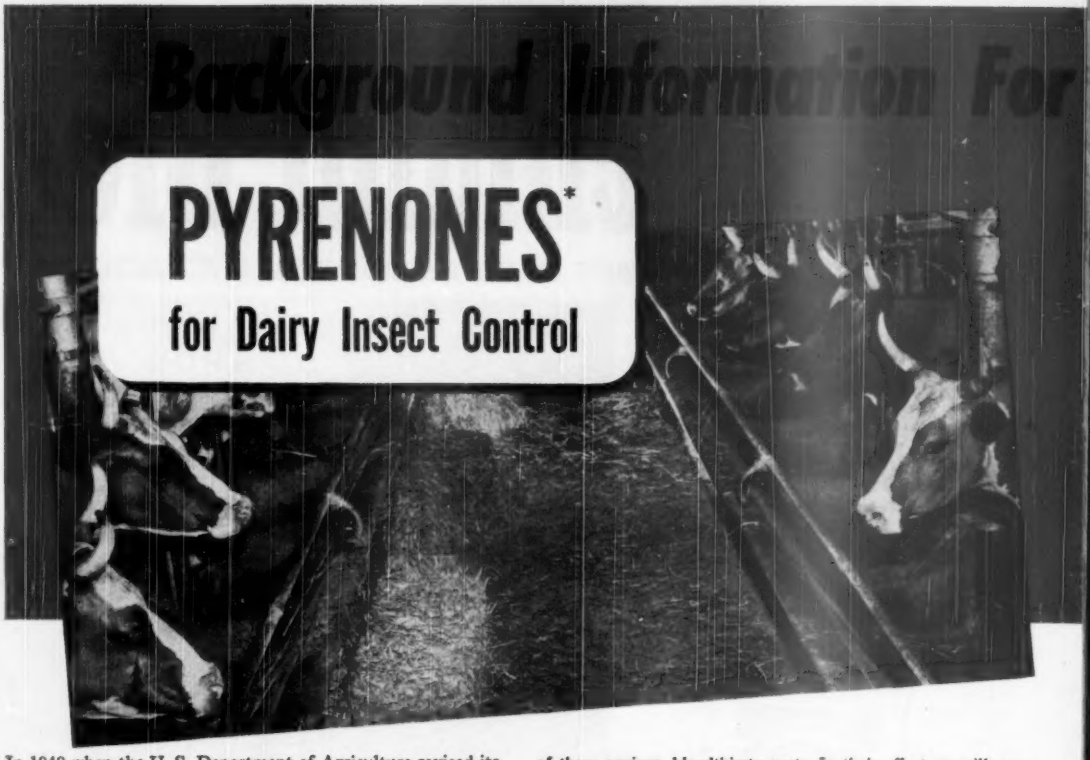
Grand Champion Carlot of the Show, Champion Angus load, first in each of the light, medium and heavy classes, a second place and two third places.

Previously, loads have come from the Schmidt farms to top the market, and on Friday, November 25, a load of Schmidt cattle set a new all-time high of $43.50.

The crowning market achievement, of course, came at the auction when the grand champion load brought a whopping $65.25.

Pillsbury Mills, Inc., Feed and Soy Division. Headquarters, Clinton, Iowa. Mills in nine other cities.

Pillsbury's Best FEEDS and CONCENTRATES



In 1949 when the U. S. Department of Agriculture revised its recommendations for insect control on dairy cattle, only two types of insecticidal material were found acceptable from the standpoints of effectiveness and freedom from toxicological hazards. One of these was the combination of pyrethrins with the new chemical, piperonyl butoxide. As sole manufacturers of this material, U. S. Industrial Chemicals, Inc., believes that Extension Workers, County Agents, Vo-Ag Teachers and others concerned with helping the dairy farmer will welcome this quick summary of facts.

NAME— Combinations of pyrethrins and piperonyl butoxide are sold only under the U.S.I. trade name PYRENONE, and only to recognized manufacturers of finished insecticides.

LABEL— Most of these manufacturers use the "Pyrenone" name on their labels, some do not. Dairy farmers *should always look at the ingredient statement on the label.* If the statement shows "pyrethrins" and "piperonyl butoxide" the product is a Pyrenone-based insecticide.

WHY THE COMBINATION? Pyrethrum has long been one of our safest and most effective insecticides. Piperonyl butoxide is a new chemical, an effective insecticide itself, which has the peculiar ability to work in combination with minute amounts of pyrethrins to produce a total effectiveness many times that of either component.

SAFETY — Pyrenone-based insecticides leave no toxic residues harmful to humans or warm-blooded animals. Used as directed they are entirely safe for use on cows, in milk rooms and in other parts of dairy, farm, or ranch buildings. They won't contaminate milk, meat or other animal products.

EFFECTIVENESS — Pyrenone-based insecticides are equal or superior to other acceptable insecticides in the control of horn flies, stable, deer and house flies, gnats and mosquitoes. In the case of HORSE FLIES, (tabanids) Pyrenones are unique. They are the only acceptable insecticide that provides any measurable control of these noxious, bloodthirsty pests. In their effect on milk production during midsummer, horse flies can be a menace of the first order; as carriers of anthrax, anaplasmosis, and, possibly, other diseases they can be even more serious.

CONVENIENCE — Pyrenone-based insecticides are often preferred by dairy farmers because they can be obtained in oil-spray or emulsion forms. Pyrenones are also available, however, in wettable powders.

The availability of Pyrenones and their effectiveness and safety as area-type sprays, plus their suitability for direct application to the animal is another convenience factor. This has been an important reason for the trend away from barn spraying. While Pyrenones are the practical equal of any suitable residual-type spray in effectiveness and lasting power, more and more dairy farmers are getting away from large-scale, labor-consuming barn spraying. They do find it practical to use Pyrenone-type insecticides for treating milk rooms, passageways and other readily accessible surfaces.

Pyrenone-based insecticides have an added advantage: they're suitable not just for dairy insect control, but also for general use around the farm for protecting horses, sheep, goats, hogs, poultry, dogs, and cats.

**Pyrenone is a registered trade-mark of U.S.I. It designates combinations of pyrethrins and piperonyl butoxide.*

U.S.I. INDUSTRIAL

When writing advertisers please mention *Better Farming Methods*

Agricultural Leaders On...

CPR for Truck Crop Insect Control

Truck farmers have a new, powerful ally that was thoroughly field-proved during the 1949 season. It's an insecticide combination known as *CPR*—the first truly multi-purpose formulation for use on truck crops. CPR-based insecticides were introduced commercially last year, after five years of extensive field tests in 15 states. These tests and subsequent practical use showed conclusively that CPR-based insecticides are safe . . . economical . . . convenient to use . . . and effective against an extremely wide variety of both chewing and sucking insects that damage truck crops.

The trade-name CPR designates combinations of pyrethrins and rotenone—both long recognized as safe, effective insecticides—and a relatively new chemical, piperonyl cyclonene. Piperonyl cyclonene is a highly effective insecticide in its own right. When combined with small amounts of pyrethrins and/or rotenone it produces an insecticidal effectiveness *many times* that of either component alone. For this reason CPR deserves recognition as a *completely new type of insecticide concentrate*—rather than a pyrethrum or rotenone type of product.

Wide-Range Effectiveness

Here is the wide variety of insects against which CPR-based insecticides are effective—

BEANS
Mexican bean beetle
Onion thrips
Corn ear worm
Bean leaf beetle

TOMATOES
Flea beetle
Colorado potato beetle
Blister beetle
Potato aphid

CURCUBITS
Melon worm
Pickle worm
Squash vine borer

CRUCIFEROUS CROPS
Imported cabbage worm
Diamond back moth
Cabbage loopers

PEAS
Pea weevil
Omnivorous leaf tier
Pea aphid

CELERY
Lygus campestris
Celery leaf tier

ASPARAGUS
Asparagus beetle

POTATOES
Colorado potato beetle
Blister beetle
Flea beetle

BEETS
Webworm

LETTUCE
Corn ear worm

SPINACH
Leaf tier

BLUEBERRIES
Blueberry fruit fly

ORNAMENTAL PLANTS
Box elder bug

Utmost in Safety

Truck farmers can use insecticides made with CPR *with complete assurance of safety* to both user and final consumer. They leave *no toxic residues* harmful to humans. Crops can be treated right up to time of harvest, and forage treated with CPR can safely be fed to livestock.

FIELD TESTS

In their first year on the market, CPR-based insecticides received a thorough on-the-job testing in almost every section of the country. Reports from 31 federal- or state-supported research institutions, and from 13 farm users gave evidence of their outstanding safety and effectiveness . . . their suitability for *all-around, all-season* truck crop insect control.

To date, reports of successful use of CPR have been received from:

NEW ENGLAND
Maine
Massachusetts
Connecticut

MIDDLE ATLANTIC
New York
Pennsylvania
New Jersey
Virginia

SOUTH
South Carolina
Georgia
Tennessee
Florida

MIDWEST
Ohio
Iowa
Michigan
Nebraska
Wisconsin
Indiana

SOUTHWEST
Texas
Arizona
Arkansas

WEST
Oregon
Utah
Wyoming
Colorado
California
Montana
Washington

CHEMICALS, INC.
60 East 42nd Street, New York 17, N. Y.

IN CANADA: Standard Chemical Co., Ltd.
99 Vanderhoof Avenue, Leaside, Toronto 17, Ontario

How to Use and Apply Toxaphene Dusts and Sprays

Insect	*Rate and Method of Application*	*Remarks*
COTTON INSECTS: Boll weevil, Bollworm, Cotton aphid, Cotton fleahopper, Cotton leafworm, Rapid plant bug, Southern green stink bug, Tarnished plant bug, Thrips	In general, official recommendations of the leading cotton-growing states call for 10 pounds of 20% toxaphene dust per application per acre against the boll weevil, bollworm, cotton aphid, cotton leafworm, and southern green stink bug. For the cotton fleahopper, rapid plant bug, tarnished plant bug, and thrips, 10 pounds of 10% toxaphene dust per application per acre is recommended. Where the red spider is present, include at least 40% conditioned dusting sulphur in a toxaphene formulation. Fifty pounds per acre per season is the average treatment.	Apply toxaphene poison in calm air under favorable weather conditions. Set nozzles 6 to 8 inches above the tops of the plants. In airplane dusting, be sure that swathes meet and overlap.
Grasshopper	The USDA official publication EC-7, "Grasshopper Control Improved By New Insecticides," February, 1949, recommends the application of 1.5 lbs. of toxaphene per acre when used as a spray, or 2 lbs. of toxaphene per acre when used as a dust. These dosages have given high initial kills and residual action lasting 1 to 3 weeks under a wide variety of conditions, and are recommended to farmers for general use. A slight increase in the dosage of both sprays and dusts may be necessary late in the season, when most of the grasshoppers are adults and vegetation is maturing. Dry bait containing 1 lb. of toxaphene per 100 lbs. of coarse bran when applied at a rate of 5 to 10 lbs. per acre will give as good initial control and will remain effective longer than a standard wet bait containing 6 lbs. of sodium fluosilicate applied at the recommended rate. An effective wet bait can be prepared by mixing 3 lbs. of toxaphene in emulsion form with 100 lbs. of standard dry bran-sawdust mixture.	Toxaphene insecticides can be used to advantage on infestations of young grasshoppers found on roadsides, canal banks, field margins, or idle land bordering cultivated fields. Spray or dust these infestations when the main hatch is completed or when the young 'hoppers begin to move off the hatching grounds, and thus greatly reduce the acreage to be treated. Toxaphene also prevents grasshoppers from damaging corn and other crops if field margins are treated before the 'hoppers move in.
Sugar Beet Webworm	The Montana State College Experiment Station recommends a toxaphene spray applied at the rate of 1 to 1.5 lbs. of actual toxaphene per acre, as being very effective in the control of sugar beet webworm larvae. The Wyoming Agricultural Extension Service also recommends 1.5 lbs. of actual toxaphene per acre when used as a spray, or 10% toxaphene applied at the rate of 25 to 30 lbs. per acre when used as a dust.	Toxaphene sprays or dusts are very effective in the control of sugar beet webworm larvae if applied in such a manner as to give good coverage to the underside of the beet leaves. Covering the underside of the leaves thoroughly is important, because a majority of the young larvae feed on this part of the leaves.
Salt-Marsh Caterpillar	The USDA, in a report made October, 1948, said that a dust mixture of 15% toxaphene plus 5% DDT in 40% sulfur, has been found to give control of the caterpillar when applied at the rate of 20 lbs. per acre.	Apply toxaphene insecticides to crops by means of dusting or spraying equipment so that a uniform distribution is obtained. Apply in calm air, under favorable weather conditions, at any time during the day. Set nozzles 6 to 8 inches above the tops of plants.
Armyworms	In general, the USDA and several states recommend: DUST—For control of various species of armyworms and the variegated cutworm, use a dust containing 20% toxaphene and apply at rates of from 10 to 20 lbs. per acre, depending upon the crop. SPRAY—Apply the correct amount of toxaphene emulsion to give 2 lbs. of actual toxaphene per acre with good coverage. BAIT—In some situations, such as armyworm infestation of cornfields, where the sweet corn is so tall that ground-dusting equipment is not feasible, baits may be a preferable means of control. Use a bait consisting of 5 lbs. of toxaphene per 100 lbs. of wheat bran, and apply this mixture at the rate of 35 lbs. per acre, if dusted by plane; or throw in whorls of plants at the rate of about 5 lbs. per acre, if applied by hand.	
PEANUT INSECTS: Leafhopper, Velvetbean Caterpillar, Fall Armyworm, Thrip	The Alabama Extension Service recommends four applications of a dust containing 10% toxaphene. Apply at a rate of 20 to 25 lbs. per acre. In general, excellent control on peanuts has been obtained by the use of 10% toxaphene dust applied at a rate of 10 to 20 lbs. per acre. The Coastal Plain Experiment Station, Tifton, Ga., recommends the use of 12 to 15 lbs. of 20% toxaphene poison per acre. Experiments performed during 1948-49 at Alabama Polytechnic Institute, Auburn, Ala., have shown that thrips can be controlled with a 10% toxaphene dust applied at the rate of 20 to 25 lbs. per acre.	Peanut insects can be controlled and higher yields realized from peanut crops through the use of toxaphene (chlorinated camphene containing 67-69% chlorine) dusts, especially if the expected yield is 1,000 lbs. or more per acre. If the yield is less than 1,000 lbs. per acre, other practices that increase peanut yields may be more profitable than dusting. Insecticides should not be used on peanuts that are to be harvested and used for forage within 30 days.
Alfalfa Weevil	Colorado A. & M. College recommends toxaphene at concentrations recommended by manufacturers as stubble spray or when growth of first crop is not over 3 to 6 inches high.	
Aster Leaf Miner	University of California, College of Agriculture, Division of Entomology, recommends 1 qt. of 50% emulsifiable toxaphene concentrate to 100 gals. of water. 3 applications before population is allowed to build up; 4 to 5 applications where heavy infestation occurs.	
Blister Beetles	Mississippi Extension Service Leaflet 91 recommends 20% toxaphene dust at 15 to 20 lbs. per acre.	
Chinch Bug in St. Augustine Grass	Florida Agricultural Experiment Station handbook recommends 10% toxaphene dust at rate of 1 to 1½ lbs. per 1,000 square feet.	
Garden Webworm on Alfalfa	Kansas State College recommends 2 lbs. actual toxaphene per acre as water miscible or oil soluble.	

Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.

DR. LEGEAR'S INSECT POWDER—Dr. L. D. LeGear Medicine Co., 4161 Beck Ave., St. Louis 16, Mo.

PRENTOX NO. 20—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N.Y.

PYRETHRUM NO. 20, 40, 60 and 100 and PYRETOX DUST BASE—U. S. Industrial Chemicals, Inc., 60 E. 42nd St., New York 17, N. Y.

PYREFUME-IMPREGNO—S. B. Penick & Co., 50 Church St., New York 7, N. Y.

RED ARROW GARDEN SPRAY—McCormick & Co., Inc., McCormick Bldg., Baltimore 2, Md.

SPECIAL GULFSPRAY (contains pyrethrum and piperonyl butoxide—for use where food stuffs are processed or stored)—Gulf Oil Corp., Gulf Bldg., Pittsburgh 30, Pa.

VAPOROL FOG SPRAY—California Spray-Chemical Corp., Richmond, Calif.

ROTENONE

ACME GARDEN GUARD and NNOR GARDEN SPRAY—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.

BOTANO-R SPRAY—California Spray-Chemical Corp., Richmond, Calif.

CCC—Carbola Chemical Co., Inc., Natural Bridge, N. Y.

COLO 44—Chemical Corp. of Colorado, West 12th & Quivas Sts., Denver, Colo.

CORONA DUST NO. 75—Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.

CPR DUST AND LIQUID BASE (Mixture piperonyl cyclonene, pyrethrum and rotenone; intermediate for aero crop and land dusting vs. wide range of insects; non-toxic to warm-blooded animals)—U. S. Industrial Chemicals, Inc., 60 E. 42nd St., New York 17, N. Y.

CUBOR—Chipman Chemical Co., Bound Brook, N. J.

DUST OF AGICIDE, D.R. 2.25 (Rotenone & DDT) and AGICIDE SPRAY BASE—Agicide, Inc., 1600 Junction Ave., Racine, Wis.

FLEA-NOT POWDER—Nott Mfg. Co., Mt. Vernon, N. Y.

GREENTOX, ROTOSYN and QB-DUST—Bonide Chemical Co., Utica, N. Y.

KROP-SAVER DUST 75 R—Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.

MACKWIN SUPER DUST—Mackwin Co., Winona, Minn.

McCORMICK RED ARROW DUST—McCormick & Co., Inc., McCormick Bldg., Baltimore 2, Md.

MEXIDE—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 2, Md.

NIAGARA RO-KIL SPRAYS and DUSTS—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

PENICK and FOLIAFUME (pyrethrum-rotenone plant spray)—S. B. Penick & Co., 50 Church St., New York 7, N. Y.

PEST MASTER—Michigan Chemical Corp., St. Louis, Mich.

PRENTOX CUBE—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N.Y.

STAUFFER'S MIXTURES—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

400 SPRAY, 75 DUST and 100 SPRAY—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

U. S. Industrial Chemicals, Inc., 60 E. 42nd St., New York 17, N. Y. (powder and resins).

RYANIA

KROP-SAVER DUST 40 RX—Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.

MACKWIN DUST NO—Mackwin Co., Winona, Minn.

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 3, Md.

RO-KO LIQUID SPRAY—California Spray-Chemical Corp., Richmond, Calif.

RYANICIDE—S. B. Penick & Co., 50 Church St., New York 7, N. Y.

SABADILLA

AGICIDE SABADUST—Agicide, Inc., 1600 Junction Ave., Racine, Wis.

OPTIMO—S. B. Penick & Co., 50 Church St., New York 7, N. Y.

PRENTOX—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N. Y.

SABACIDE—Mackwin Co., Winona, Minn.

SABANE — Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

SODIUM FLUORIDE

ALCOA—Aluminum Co. of America, Pittsburgh 19, Pa.

GENERAL CHEMICAL—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

NOTT'S ROACH POWDER—Nott Mfg. Co., Mt. Vernon, N. Y.

Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis, Mo.

E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

STICKERS & SPREADERS

CP-5 DUST STICKER and COLLOIDAL Z-1 SPREADER-STICKER—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

FILMFAST—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

LINCK WA SPREADER—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

NOPCO 1959 and NOPCO 1572-B—Nopco Chemical Co., Harrison, N. J.

NU-FILM—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

PLANTSPRAY SPREADER—Plant Products Corp., Blue Point, L. I., New York.

SUMMER SPREADER—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.

SUMMER OIL SPRAYS

MEDOSOL OIL, MEDOL OIL and TRIONA OIL—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.

MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

NIAGROL—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

ORNAMENTAL SPRAY OIL—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

VOLCK, GREENOL, ORTHOL-K and ORTHOL-D — California Spray-Chemical Corp., Richmond, Calif.

TARTER EMETIC

TARTOX—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis, Mo.

TETRAETHYL PYROPHOSPHATE (TEPP)

ACME TETRA SPRAY—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.

BLADEX F-2 (emulsifiable type)—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.

FOSVEX—Westvaco Chemical Div., Food Machinery & Chemical Corp., New York 17, N. Y.

HEXAMITE — Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

ISCOMIST—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.

KILMITE—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

KROP-SAVER TEP-TOX — Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.

MACKOPHOS — Mackwin Co., Winona, Minn.

MULSIFOS & PYFOS—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.

NIFOS-T—Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.

PHOSPHOFUME—Plant Products Corp., Blue Point, L. I., New York.

TAT HEXATE—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

TETRON-100—Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles 23, Calif.

VAPOTONE INSECTICIDES—California Spray-Chemical Corp., Richmond, Calif.

How to Use and Apply Toxaphene Dusts and Sprays

Insect	*Rate and Method of Application*	*Remarks*
Green Cutworm on Celery	Florida Agricultural Experiment Station handbook recommends 3 lbs. of 40% toxaphene wettable powder or equivalent per 100 gals. of water. One spray nozzle should be adjusted to spray directly into hearts of the plants.	
Pear Thrips	University of California, College of Agriculture, Division of Entomology, recommends 2 lbs. of 40% toxaphene wettable powder to 100 gals. of water.	Sprays were applied to Elberta peaches when 90% of petals had fallen.
Serpentine Leaf Miner	Florida Agricultural Experiment Station handbook recommends 4 lbs. of 25% toxaphene wettable powder per 100 gals. of water.	This dosage was recommended for the Serpentine leaf miner on beans, tomatoes, okra, and potatoes.
Spittlebug Nymphs	University of Wisconsin Extension Service College of Agriculture recommends 1½ lbs. actual toxaphene as emulsion or wettable powder in at least 25 gals. of water per acre.	
Sweet Clover Weevil	University of Nebraska, College of Agriculture, recommends 10% toxaphene dust at 20 lbs. per acre; toxaphene emulsion or wettable powder at 2 lbs. of actual toxaphene per acre. Application to be made just as clover leaf buds are opening. If seedling fields are treated for migratory weevils the dusts or sprays should be applied when the first true leaves appear on the seedling plants.	
Tobacco Budworm	Florida Agricultural Experiment Station handbook recommends 10% toxaphene dust at the rate of 15 to 35 lbs. per acre. Make first application when injury is first noticed and repeat at ten day intervals or as needed.	
Tobacco Hornworm	Florida Agricultural Experiment Station handbook recommends toxaphene wettable powder at the rate of 1 lb. of toxaphene per 100 gals. of water. Sprays applied at 75 to 100 gals. per acre; 10% toxaphene dust at 30 to 35 lbs. per acre.	
Tomato Hornworm	Florida Agricultural Experiment Station handbook recommends 4 lbs. toxaphene wettable powder or equivalent. Repeat application at two week intervals or as needed.	
Tomato Pinworm	Florida Agricultural Experiment Station handbook recommends 4 lbs. of 25% toxaphene wettable powder or equivalent per 100 gals. of water. Repeat at two week intervals or as needed.	
Pear Psylla	New York State's Department of Entomology in its "Spray and Dust Recommendations for Fruit and Insect Control in 1949" recommends a summer spray of 3 lbs. of 25% toxaphene wettable powder per 100 gals. of water.	

PRECAUTIONS: Toxaphene, like most insecticides, can be poisonous to man and livestock. The residue resulting from dusting or spraying crops may persist for days or weeks after application. Do not feed forage treated with toxaphene insecticides to dairy animals or to animals being finished for slaughter, and do not apply them to the parts of vegetables or fruits that will be eaten or marketed unless residues are removed by washing or stripping.

The above state and federal recommendations on toxaphene are as of November 1, 1949.

How to Use and Apply Lindane

Insect	*Formulation*	*Rate of Application*	*Remarks*
Ants	20% Liquid Concentrate	1 part Concentrate in 9 to 16 parts odorless Kerosene	Apply by means of hi-fog gun or other atomizing equipment.
	20% Liquid	1 gallon per 25 gallons of water.	Spray baseboards, cracks and floors. Repeat application as often as necessary.
	25% Wettable Powder	10 lbs. per 100 gallons of water.	Spray baseboards, cracks and floors. Repeat application as often as necessary.
Aphis	20% Liquid	1 pint per 100 gallons diluted spray.	Spinach. Apply in seedling stage.
		1 pint per 100 gallons diluted spray.	Celery. Do not apply after plants are half grown.
		1 pint per 100 gallons diluted spray.	Cole crops. Do not use on cabbage after heads begin to form.
		1 pint per 100 gallons diluted spray.	Greenhouse nursery plants. Repeat applications as necessary.
	25% Powder	1 lb. in 100 gallons of water.	Apples, walnuts, forage crops. Do not apply later than 2 weeks before harvest. Do not apply on Apples within 60 days of harvest.
		1 lb. in 100 gallons of water.	Celery. Treat before Celery is half grown.
		1 lb. in 100 gallons of water.	Cole crops. Treat before heads form.
		1 lb. in 100 gallons of water.	Cucurbits. Do not apply after blossoms form. Treat under leaves also.
		1 lb. in 100 gallons of water.	Peppers. Do not apply after blossoms fall.
		1 lb. in 100 gallons of water.	Spinach. Use only in seedling stage. Do not apply later than two weeks before harvest.
		½ lb. per 100 gallons of water.	(For fresh fruit market only). Do not apply after blossoms fall.
		1 lb. per 100 gallons of water.	Tobacco. Repeat treatment as necessary.
	2% Dust	25 to 45 lbs. per acre.	Beans-lima beans. Treat before pods form.
		25 to 45 lbs. per acre.	Citrus. Treat early.
		25 to 45 lbs. per acre.	Cole crops. Treat before heads form.
		25 to 45 lbs. per acre.	Corn. Do not treat when silks are green.
		25 to 45 lbs. per acre.	Cucurbits. Depending on plant size and insect infestation. Do not treat while harvesting pickles.
		25 to 45 lbs. per acre.	Egg plant. Depending on plant size and insect infestation. Treat at least two weeks before harvest.
		25 to 45 lbs. per acre.	Forage crops-Alfalfa and Clover. Apply when first cutting is 2 to 4 inches high and repeat after each cutting.
		25 to 45 lbs. per acre.	Apples, peaches, plums, prunes. Do not apply later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Peppers. Do not apply later than 1 week before harvest.
		25 to 45 lbs. per acre.	Spinach. Depending on size of plants and insect infestation. Do not apply after plants are more than ¾ grown.
		25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation.
Aphis	1.5% Dust	25 to 45 lbs. per acre.	Beans & lima beans. Depending on plant size and insect infestation.
		25 to 45 lbs. per acre.	Citrus. Depending on plant size and insect infestation.
		25 to 45 lbs. per acre.	Cole crops. Depending on plant size and insect infestation. Treat before heads form.
		25 to 45 lbs. per acre.	Corn. Depending on plant size and insect infestation. Do not treat when silks are green.
		25 to 35 lbs. per acre.	Cucurbits. Treat when insects first appear. Avoid dusting during harvest period of pickles.
		25 to 30 lbs. per acre.	Egg plant. Treat not later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Forage crops-Alfalfa and Clover. Apply when first cutting is from 2 to 4 inches high. Do not apply during the blossom period.
		25 to 45 lbs. per acre.	Apples, peaches, plums, prunes. Treat not later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Peppers. Treat not later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Spinach. Do not treat after Spinach is half grown.

TOXAPHENE

AGICIDE—Agicide, Inc., 1600 Junction Ave., Racine, Wis.
ALLTOX INSECTICIDES—California Spray-Chemical Corp., Richmond, Calif.
CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.
COLO 44—Chemical Corp. of Colorado, West 12th & Quivas Sts., Denver, Colo.
GENIPHENE—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
MACKOPHENE—Mackwin Co., Winona, Minn.
PRENTOX—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N. Y.
RESITOXAPHENE 60 (in oil)—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
SECURITY BRAND—Woolfolk Chemical Works, Ltd., Ft. Valley, Ga.
STAUFFER'S CONCENTRATES and MIXTURES—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.
TOXAKIL MISCIBLE—Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.
Hercules Powder Co., Wilmington 99, Del. (raw material).

HERBICIDES

A—GROWTH REGULATORS (SELECTIVE)

2,4-D (2,4-Dichlorophenoxyacetic Acid)

ALKANOLAMINE SALTS of 2,4-D

A water soluble form of 2,4-D, generally offered in liquid solution, utilized for the control of many annual and perennial weeds with the exception of most grasses and brambles.

AGICIDE WEED WILT—Agicide, Inc., 1600 Junction Ave., Racine, Wis.
COLO 44—Chemical Corp. of Colorado, West 12th and Quivas Sts., Denver, Colo.
DED-WEED A40 — Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
ENDO WEED KILLER—Swift & Co., Union Stock Yards, Chicago, Ill.
KOLKER—Kolker Chemical Works, Inc., 80 Lister Ave., Newark 5, N. J.
KROP-SAVER AMINE CONCENTRATE —Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.
DR. LEGEAR'S WEED KILLER—Dr. L. D. LeGear Medicine Co., 4161 Beck Ave., St. Louis 16, Mo.
MACKWIN WEED KILLER NOS. 75 and 64—Mackwin Co., Winona, Minn.
NIAGARA AMSOL—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.
NOTT'S 2,4-D—Nott Mfg. Co., Mt. Vernon, N. Y.
TUFOR and TUFOR-40—Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.
WEEDAR 64—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.
WEEDMASTER—Michigan Chemical Corp., St. Louis, Mich.

AMINE SALTS of 2,4-D

(See explanation for Alkanolamine Salts)

2,4-D 65% AMINE WEED KILLER (Tri)—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

2,4 DIOWEED (Tri)—Bonide Chemical Co., Utica, N. Y.

2,4—DOW FORMULA 40—Dow Chemical Co., Midland, Mich.

CHIPMAN (Mono)—Chipman Chemical Co., Bound Brook, N. J.

DED-WEED 40 (Di)—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

DRY AMSOL (Di)—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.

GENERAL CHEMICAL—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

KATHON M-7 (Di)—Rohm & Haas Co., Philadelphia 5, Pa.

KOLKER—Kolker Chemical Works, Inc., 80 Lister Ave., Newark 5, N. J.

STAUFFER'S ALKYL—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

TAT LIQUID WEEDETTE—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

WEED-B-GON 64 WEED KILLER (Di) and WEED-B-GON 88 WEED KILLER (Tri)—California Spray-Chemical Corp., Richmond, Calif.

WEEDMASTER (Tri)—Michigan Chemical Corp., St. Louis, Mich.

WEEDOUT—Doggett-Pfeil Co., Springfield, N. J.

National Agricultural Supply Co., Ft. Atkinson, Wis. (Tri)

ESTERS of 2,4-D

Oil soluble forms of 2,4-D, generally offered as water emulsifiable solutions, for the control of many annual and perennial weeds with the exception of most grasses and brambles. Especially useful for the control of hard-to-control perennials and woody species.

2,4-D 46% (Isopropyl)—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

AGRICULTURAL WEED-NO-MORE (Butyl)—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.

CHIPMAN (Isopropyl)—Chipman Chemical Co., Bound Brook, N. J.

COLO 44 (Isopropyl and Butyl)—Chemical Corp. of Colorado, West 12th and Quivas Sts., Denver, Colo.

DED-WEED (Ethyl, Isopropyl and Butyl)—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

ESTERCIDE 333 (Isopropyl)—California Spray-Chemical Corp., Richmond, Calif.

ESTERON 44 (Isopropyl)—Dow Chemical Co., Midland, Mich.

GENERAL CHEMICAL—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

IVY-KILL (Isopropyl)—Plant Products Corp., Blue Point, L. I., New York.

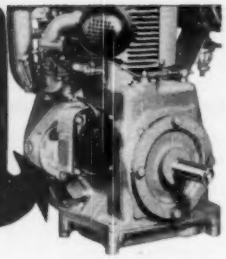
KATHON E-33 (Isopropyl)—Rohm & Haas Co., Philadelphia 5, Pa.

How to Use and Apply Lindane

(Continued)

Insect	*Formulation*	*Rate of Application*	*Remarks*
		25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect population. Do not dust after fruit starts to set.
	1% Dust	25 to 45 lbs. per acre.	Beans & lima beans. Depending on plant size and insect population. Treat before pods form.
		25 to 45 lbs. per acre.	Cabbage for seed. Depending on plant size and insect population.
		25 to 45 lbs. per acre.	Citrus. Depending on plant size and insect population. Treat early (see caution).
		25 to 45 lbs. per acre.	Cole crops. Treat before heads form.
		25 to 45 lbs. per acre.	Corn. Do not treat when silks are green.
		25 to 45 lbs. per acre.	Cucurbits. Depending on plant size and insect infestation. Do not treat while harvesting pickles.
		25 to 45 lbs. per acre.	Egg plant. Treat at least 2 weeks before harvest.
		25 to 45 lbs. per acre.	Forage crops-Alfalfa & Clover. Apply when first cutting is 2 to 4 inches high. Do not apply during blossoming period.
		25 to 45 lbs. per acre.	Apples, peaches, plums, prunes. Do not apply later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Peppers. Do not apply later than two weeks before harvest.
		25 to 45 lbs. per acre.	Spinach. Do not apply after plants are more than ¾ grown.
		25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect population. Do not dust when fruit starts to set.
Armyworms	25% Powder	1 lb. per 100 gallons of water.	Peppers. Do not apply after blossoms form.
Asparagus Beetle	2% Dust	25 to 45 lbs. per acre.	Asparagus. Do not treat Cutting Asparagus unless it will be thoroughly washed.
	1.5% Dust	25 to 45 lbs. per acre.	Asparagus. Do not treat Cutting Asparagus unless it will be thoroughly washed.
	1% Dust	25 to 45 lbs. per acre.	Asparagus. Do not treat Cutting Asparagus unless it will be thoroughly washed.
Bedbugs	20% Liquid Concentrate	1 part Concentrate in 9 to 16 parts odorless Kerosene	Apply by means of hi-fog gun or other atomizing equipment.
Cabbage Maggot	25% Powder	1 lb. per 100 gallons of water.	Cole crops. Treat before heads begin to form.
Cabbage Seed Pod Borer	1% Dust	25 to 45 lbs. per acre.	Cabbage for seed. Depending on size and insect population.
Chiggers	25% Powder	2 lbs. per 100 gallons of water.	On vegetation. Depending on plant size and insect population.
Climbing Cutworms	25% Powder	1 lb. per 100 gallons of water.	Celery. Treat before celery is half grown.
Clothes Moths	20% Liquid Concentrate	1 part Concentrate in 9 to 16 parts odorless Kerosene	Apply by means of hi-fog gun or other atomizing equipment.
Colorado Potato Beetle	2% Dust	25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation.
	1.5% Dust	25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation. Do not dust after fruit starts to set.
	1% Dust	25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation. Do not dust after fruit starts to set.
Cucumber Beetle	20% Liquid	¼ to ½ pint per 100 gallons diluted spray.	Cucurbits. Do not use after blossoms form.
		1 pint per 100 gallons of water.	Camellias, azaleas, rhododendrons. Spray to saturate soil around plants in beds.
	25% Powder	½ lb. per 100 gallons of water.	Cucurbits.
	2% Dust	25 to 45 lbs. per acre.	Cucurbits. Do not treat while harvesting pickles.
	1.5% Dust	10 to 15 lbs. per acre.	Cucurbits. Treat before bloom.
	1% Dust	25 to 45 lbs. per acre.	Cucurbits. Depending on plant size and insect infestation. Do not treat while harvesting pickles.
Cutworms	20% Liquid	Use 1¼ to 1½ pints per acre in sufficient water for even distribution.	Soil insects. Apply as a spray directly on the soil, then disc as soon as practicable to give thorough distribution in upper 4 to 6 inches of soil.
	25% Powder	Use 1 to 2 lbs. per 100 gallons water per acre.	Soil insects. Apply as a spray or dust directly on the soil then disc as soon as practicable to give thorough distribution in upper 4 to 6 inches of soil.

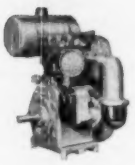
Why WISCONSIN HEAVY-DUTY Air-Cooled ENGINES Have a Rotary-Type OUTSIDE MAGNETO



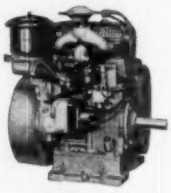
Perhaps you have never given much thought to the placing of a Magneto on an engine, nor whether it's of the "flywheel" or "Rotary" type. It's an important point because the magneto is really the heart of the engine. When it fails, your power fails.

Wisconsin engineers have found through long experience and experimentation that the best place to put the magneto, not only for convenient accessibility but for better ignition performance over an extended period of time is on the OUTSIDE . . . with an independent, direct drive from the engine to the Magneto. The Rotary Type high tension magnetos used on Wisconsin Air-Cooled Engines provide the greatest protection against ignition troubles because the Magneto itself is a complete, independent operating unit that doesn't rely on an unrelated part of the engine for its successful operation. It's tightly sealed against dust and moisture, of course, so it isn't affected by wet weather or snow and there is no chance of it getting "fouled up". And it's equipped with an *Impulse Coupling* that provides a quick, hot spark for easy starting in any weather, in any climate, a feature that can't be incorporated in flywheel-type magneto.

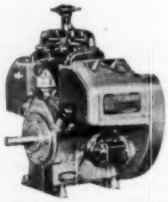
Yes, the MAGNETO is important . . . both as to *type* and *placing* on the engine. It's the *right kind* and in the *right place* on Wisconsin Heavy-Duty Air-Cooled Engines. You can conscientiously recommend "Wisconsin" for 3 to 30 hp. farm power needs . . . Descriptive literature on request.



Single cyl. 3 to 9 hp.



2-cylinder 7 to 13 hp.



V-type 4-cyl. 15-to 30 hp.

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931 Commercial Bank Bldg., PEORIA, ILL.

KOLKER (Ethyl, Isopropyl and Butyl)—Kolker Chemical Works, Inc., 80 Lister Ave., Newark 5, N. J.

KROP-SAVER ESTER CONCENTRATE—Crop Saver Chemical Co., Inc., 3511 W. Potomac Ave., Chicago 51, Ill.

MACKWIN WEED KILLER 40E (Isopropyl)—Mackwin Co., Winona, Minn.

NIAGARA ESTASOL (Isopropyl)—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.

PENCO 44E (Isopropyl)—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

STAUFFER'S (Isopropyl) — Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

TAT CROP WEEDER—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

TUFOR-E (Isopropyl)—Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

WEEDKILLER 40 (Isopropyl) — Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.

WEEDMASTER (Isopropyl) — Michigan Chemical Corp., St. Louis, Mich.

WEEDONE and WEEDONE CONCENTRATE 48 (Ethyl)—American Chemical Paint Co., 'Agricultural Chemical Div., Ambler, Pa.

Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo. (Isopropyl)

National Agricultural Supply Co., Ft. Atkinson, Wis. (Isopropyl)

SODIUM SALTS of 2,4-D

A water soluble form of 2,4-D, generally offered as a powder, utilized for the control of many annual and perennial weeds with the exception of most grasses and brambles.

2,4 DOW WEED KILLER (Powder)—Dow Chemical Co., Midland, Mich.

2,4-D 83% SODIUM WEED KILLER—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.

95% MONOHYDRATE—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.

CHIPMAN—Chipman Chemical Co., Bound Brook, N. J.

DANDY-KILL — Plant Products Corp., Blue Point, L. I., New York.

DED-WEED—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

GENERAL CHEMICAL—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

KOLKER—Kolker Chemical Works, Inc., 80 Lister Ave., Newark 5, N. J.

WEED-NOTS—Nott Mfg. Co., Mt. Vernon, N. Y.

Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.

National Agricultural Supply Co., Ft. Atkinson, Wis.

2,4,5-T (2,4-Trichlorophenoxyacetic Acid)

AMINE SALTS of 2,4,5-T

Water soluble forms of 2,4,5-T, useful for the control of many annual and perennial weeds including brambles. Not suitable for the control of most grasses.

SPRAYING EQUIPMENT See Page 66

COLO 44 (Di)—Chemical Corp. of Colorado, W. 12th and Quivas Sts., Denver, Colo.
DED-WEED A-245 (Mono)—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
KOLKER (Tri)—Kolker Chemical Works, Inc., 80 Lister Ave., Newark 5, N. J.
PENCO 40% (Tri)—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.
WEEDAWAY (Di)—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

ESTERS of 2,4,5-T

Oil soluble form of 2,4,5-T generally offered as water emulsifiable or oil dilutable solutions. Especially useful for the control of woody species (brush) and brambles. Not suitable for the control of most grasses.

CHIPMAN (Isopropyl)—Chipman Chemical Co., Bound Brook, N. J.
DED-WEED E245 BRUSH KILLER (Isopropyl)—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
ESTERCIDE-T 245 WEED and BRUSH KILLER (Isopropyl)—California Spray-Chemical Corp., Richmond, Calif.
ESTERON 245 (Isopropyl)—Dow Chemical Co., Midland, Mich.
KOLKER (Isopropyl)—Kolker Chemical Works, Inc., 80 Lister Ave., Newark 5, N. J.
WEEDMASTER (Isopropyl) — Michigan Chemical Corp., St. Louis, Mich.
WEEDONE 2,4,5-T (Butoxy Ethanol)—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.
Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.
National Agricultural Supply Co., Ft. Atkinson, Wis. (Isopropyl)

B—CONTACT WEED KILLERS (IN GENERAL, NON-SELECTIVE)

AMMONIUM SULFAMATE

AMMATE WEED KILLER—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
National Agricultural Supply Co., Ft. Atkinson, Wis.

DINITRO-O-SEC-BUTYLPHENOL

Used to kill above-ground vegetation and as a pre-emergence spray. Offered as water emulsifiable oil solution.

CHIPMAN GENERAL—Chipman Chemical Co., Bound Brook, N. J.
DOW GENERAL WEED KILLER—Dow Chemical Co., Midland, Mich.
SINOX-W—California Spray-Chemical Corp., Richmond, Calif.
National Agricultural Supply Co., Ft. Atkinson, Wis.

PENTACHLOROPHENOL

Generally used to fortify herbicidal oils. Kills above-ground vegetation.

DOW—Dow Chemical Co., Midland, Mich.

John and Jim Ryan *own two 400 gallon, 1000 lb. pressure spraying machines—the largest equipment in Southern California specializing in spraying dairies for fly control. John Ryan (right) with "Spud" Curtis, ORTHO Fieldman.*

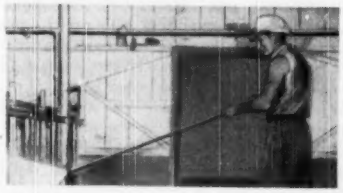
Says John Ryan:

"ISOTOX Dairy Spray is the fastest-acting fly killer I have ever used!"

"I have been using ISOTOX since March, 1949 with excellent results. It is the fastest-acting fly killer I have ever used—and it is giving me 30-day residual control.

"My customers are all well satisfied and many claim that ISOTOX gives them the best fly control they have ever had."

John Ryan certainly knows the pest control business because he and his brother Jim operate one of the most efficient and modern dairy spray businesses in Southern California.



Here's John Ryan *doing a spray job for Raymond Hanson in Artesia, California. Mr. Hanson says: "I've had a lot of trouble getting good control of flies. Flies were all over the place until Ryan came in and killed every fly I had with ISOTOX Dairy Spray. It really knocks them down. I'm plenty satisfied with the results."*

ISOTOX Dairy Spray contains lindane which has been approved by Federal authorities. Lindane has proved effective in the control of *many livestock pests.* It mixes readily with water for spraying. Also used to paint around windows, doors, walls, ceiling beams—wherever flies gather. Directions for uses on label. Packed in 1-lb. and 4-lb. cans and 20-lb. pails.

ORTHO

WHETHER YOU ARE asked for pest or weed control advice on fruit, grain, nuts or field crops, or livestock...ORTHO is at your service. Behind the ORTHO emblem stands nearly a half-century of experience. ORTHO maintains in the field a trained staff of consultants. They stand ready always to consult with you, help plan pest control programs.

Get in touch with your nearest ORTHO Fieldman or write direct on any pest control problem. See what this free service can do to help you serve your community better.

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Use Chemicals With Care

By MAYNARD COE
National Safety Council

● INSECTICIDE SPRAYS, dusts and other protective chemicals constitute one of the major contributions of science to agriculture. Properly applied, they prevent extensive agricultural losses, but carelessly handled they can cause disability or death of livestock and human beings.

It takes something more or less poisonous to kill an insect or a plant disease. Even rotenone and pyrethrum can kill fish, and in large enough doses can make a human being sick. So, sprays and dusts are something like matches and gasoline—they're useful, necessary and safe if intelligently handled, but they must be treated with the same respect.

The primary rules for safety with insecticides and fungicides are these: Store insecticides in a closed metal container, clearly identified and labeled. A cardboard box or paper bag may become broken, and roaches may carry the poison from the broken bag to the sugar or flour bin. One entire family suffered seriously from slow poisoning for months before they discovered this cause.

2. Do not store insecticides in or near kitchen or food stocks. Poisoning has been reported as a result of the accidental mixing of unidentified poisons with foods. For example, three members of a Maryland farm family of eight died and the rest were seriously stricken sometime ago. A coroner's investigation revealed that the mother had unknowingly mixed some lead arsenate in a birthday cake which she baked for a family party.

3. Use a respirator when spraying or dusting if you find the material blowing back in your face. Keep the body well covered; do not spray or dust with legs or arms bare. After you finish, bathe and change clothes. To avoid accumulation of residue, wash clothing used in spraying operations frequently.

4. Wash fruits and vegetables before using. With vegetables, it may be wise to stop treatment with the stronger chemicals, such as arsenicals and DDT from 15 to 30 days before harvest time. If they need continuing protection, use something comparatively harmless like rotenone or pyrethrum or something that weathers away quickly like nicotine sulfate. Of course, these precautions apply also to fruits that are eaten skin and all.

5. Burn empty bags which contained insecticide materials. In the case of arsenical containers, the fumes produced will be extremely dangerous, so be careful to avoid the exposure of persons or animals to the fumes. Bury unused, discarded materials at least a foot below the surface of the ground and away from the water supply and drainage channels.

6. Fumigants, such as sodium and calcium cyanide, are especially dangerous and should be kept in tight containers, plainly labeled and stored in a dry place away from living quarters.

Carbon disulfide, the common grain fumigant, is highly flammable. It should be handled and stored like gasoline. Fumigated quarters must be thoroughly aired immediately after treatment.

Persons engaged in regular spraying work with DDT should wear coveralls, a wide brimmed hat, goggles, a chemical cartridge respirator and rubber gloves. Persons applying such sprays infrequently need not be so well protected. Ordinary work clothes which are changed after spraying are adequate.

When spraying inside of houses, all open fires should be extinguished because of the explosive characteristics of the oil base used in the spray material. Do not spray children's toys, food or eating and drinking utensils. Children and pets should be kept away until sprays have dried.

Absorption of oil sprays used in barns may have a toxic effect on livestock. When in doubt, check with your county agricultural agent or your state agricultural experiment station. They can tell you, for instance, whether you can safely run livestock on forage crops that have had a special spray. If you use DDT against one pest, they can tell you whether it probably kills off the natural parasites that controlled another insect—in which case they might advise adding something for the other pest.

Recently the chemical industry developed a new plan for the identification of dangerous substances. The scheme calls for labels specifically naming the hazards—such as *flammable, corrosive, lead compound, irritating, toxic vapor when inhaled,* or whatever warning applies. The purpose of these labels is to give specific precautionary information. All of the leading manufacturers are following this plan. Therefore, the best advice of all is to read the label on each package carefully, note its warnings and instructions, and follow them!

Coming Next Month

"Principles of Contour Farming," a business-sponsored educational insert, will be featured in the February issue of Better Farming Methods. This insert is sponsored by the J. I. Case Company, Racine, Wis.

PERMAGARD—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
SANTOPHEN 20—Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.
TERMCO WOOD GUARD and ORTHO PENTA SPRAY—California Spray-Chemical Corp., Richmond, Calif.
WEEDKILLERS 30, 35, 130—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
WEEDMASTER—Michigan Chemical Corp., St. Louis, Mich.
National Agricultural Supply Co., Ft. Atkinson, Wis.

SODIUM ARSENITE

ACME WEED KILLER—Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit 11, Mich.
ARTOX—Nott Mfg. Co., Mt. Vernon, N. Y.
CHIPMAN (Powder)—Chipman Chemical Co., Bound Brook, N. J.
D & P WEED KILLER—Doggett-Pfeil Co., Springfield, N. J.
F & B WEED KILLER—Faeay & Besthoff, 220 E. 42nd St., New York, N. Y.
GENERAL CHEMICAL—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
PENITE 6—Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.
SWAN BRAND SOLUTION NO. 40—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis, Mo.

SODIUM PENTACHLOROPHENATE

Water soluble salt, generally furnished in flake form. Used to kill above-ground vegetation.

DOW—Dow Chemical Co., Midland, Mich.
SANTOBRITE—Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.
SANTOBRITE—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
National Agricultural Supply Co., Ft. Atkinson, Wis.

C—GRASS KILLERS

PMA (Phenyl Mercury Acetate)

Used specifically for crab grass. Timing of the application is very important and several applications must be made.

PURATURF CRABGRASS KILLER and PURATIZED 641—Gallowhur Chemical Corp., 801 Second Ave., New York 17, N. Y.

TCA (Sodium)

The sodium salt of trichloroacetic acid. Used as a water solution to kill perennial grasses.

COLO 44—Chemical Corp. of Colorado, W. 12th and Quivas Sts., Denver, Colo.
FORMULA 7B—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
MALEIC HYDRAZIDE—Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

The N in NPK

Barrett NITROGEN*

Barrett is America's leading distributor of Nitrogen for use in fertilizers. But Barrett service extends far beyond simply supplying Nitrogen.

Barrett technical men are in constant contact with fertilizer factory superintendents, assisting them in formulation problems, helping them to improve manufacturing methods.

To aid in determining the most efficient use of fertilizers on various crops and soils, Barrett has been conducting field tests and demonstrations for a generation.

Barrett cooperates with agricultural institutions and officials, by providing material for fertilizer tests, by establishing fellowships, and in many other ways.

Information obtained from these sources and activities is communicated to thousands of farmers by Barrett through the use of many forms of educational material.

Barrett not only distributes Nitrogen. Barrett also dispenses skill, experience, know-how and hard work in the form of SERVICE.

ARCADIAN, the American Nitrate of Soda*

•

A-N-L Brand Fertilizer Compound*

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Sulphate of Ammonia

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Barrett Standard Nitrogen Solutions

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Barrett Standard Anhydrous Ammonia

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Barrett Standard Urea Fertilizer Compound

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Barrett Standard Urea Spray Compound

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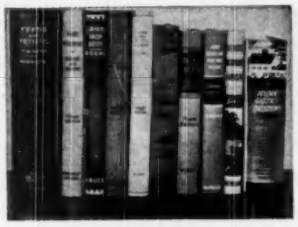
Viroqua, Wisconsin

Book Bulletin Board



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SODIUM TCA 90%—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.
SODIUM TCA 90%—Dow Chemical Co., Midland, Mich.
SODIUM TCA 90%—E. I. DuPont de Nemours & Co., Inc., Wilmington, Del.
National Agricultural Supply Co., Ft. Atkinson, Wis.
Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.

HORMONE SPRAYS

FRUIT SETTING MATERIALS

SEED-LESS-SET—Plant Products Corp., Blue Point, L. I., New York.
SURE-SET—Dow Chemical Co., Midland, Mich.
National Agricultural Supply Co., Ft. Atkinson, Wis.

PREHARVEST SPRAYS (Naphthalene Acetic Acid)

For use in preventing preharvest drop of apples and pears. Also used for thinning apples.

APP-L-SET—Dow Chemical Co., Midland, Mich.
ENDROP—Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
FRUIT-HOLD—Plant Products Corp., Blue Point, L. I., New York.
FRUIT SET—Chipman Chemical Co., Bound Brook, N. J.
FRUITONE—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.
KLING-TINT—California Spray-Chemical Corp., Richmond, Calif.
KLING-TITE—California Spray-Chemical Corp., Richmond, Calif.
MILLMASTER — Millmaster Chemical Corp., 420 Lexington Ave., New York 17, N. Y.
NIAGARA-STIK—Niagara Chemical Div., Food Machinery Corp., Middleport, N. Y.
NU-TONE—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
PARMONE DUST & CONCENTRATE—E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
STAFAST—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

ROOTING COMPOUNDS

Promotes rooting of slips and cuttings.

QUICK ROOT NOS. 1 & 2—Dow Chemical Co., Midland, Mich.
ROOTONE—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.
ROOTONE—National Agricultural Supply Co., Ft. Atkinson, Wis.
ROOTONE—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
STIM-ROOT—Plant Products Corp., Blue Point, L. I., New York.

SPROUT INHIBITORS

Controls sprouting and shrinkage in stored potatoes.

BARSPROUT—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
BARSPROUT—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
DORMATONE—American Chemical Paint Co., Agricultural Chemical Div., Ambler, Pa.
DOW SPROUT INHIBITOR DUST—Dow Chemical Co., Midland, Mich.
SPUD-KEEP—Plant Products Corp., Blue Point, L. I., New York.
SPUD-SLEEP—Faesy & Besthoff, Inc., 220 E. 42nd St., New York, N. Y.
STOP SPROUT—Chipman Chemical Co., Bound Brook, N. J.

MITICIDES

ARYL ALKYL SULFITE

ARAMITE-15W—Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

DINITRO-O-CRESOL

DN DRY MIX NO. 2—Dow Chemical Co., Midland, Mich.
ORTAZOL—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.

DINITRO-O-CYCLOHEXYLPHENOL

Wettable powders of the free phenol and the dicyclohexyl amine salt used in sprays for the control of most plant-feeding mites. Also available in dust preparations. Major crops used on: apples, peaches and citrus.

DN DRY MIX No. 1, DN-111 and DN DUST NO. 4—Dow Chemical Co., Midland, Mich.

SULFUR

Occasionally used as a spray or dust for the control of certain plant-feeding mites.

BONSUL—Bonide Chemical Co., Utica, N. Y.
ORTHO DUSTING SULFUR and LIME-SULFUR SOLUTION—California Spray-Chemical Corp., Richmond, Calif.
OWL, PERFECTION and ELECTRIC—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y.

RODENTICIDES

ANTU

AGICIDE RAT TRACK—Agicide, Inc., 1600 Junction Ave., Racine, Wis.
BONTU—Bonide Chemical Co., Utica, N. Y.
DETHDIET—National Agricultural Supply Co., Ft. Atkinson, Wis.
DR. LEGEAR'S 3 WAY RAT KILLER—Dr. L. D. LeGear Medicine Co., 4161 Beck Ave., St. Louis 16, Mo.

The miracle of meat

ALL of us in the livestock-meat industry know that meat is appetizing, wholesome, satisfying. "It sticks to the ribs." People *like* it. But perhaps we don't all realize just what a miracle food meat really is. We know it's good—but do we know how good it is *for* people . . . how important to the health of individuals and of the nation.

If you feed livestock or poultry you know the importance of protein in their ration. It's just as important in the human diet. Proteins are known as the *building blocks* of the body. They build and renew the living cells in muscles, tissue and blood.

Meat supplies the essential protein in a form that our bodies can use most readily. The most valuable protein foods—meat and poultry, milk, eggs and fish all contain what are known as amino acids. There are 23 different amino acids. *Ten of them are absolutely essential to human health. All ten are found in meat.* Important vitamins, too, like riboflavin, niacin, thiamin . . . and "APF" (animal protein factor), the newly discovered, *very* important vitamin B_{12} that's found only in animal products.

Most new discoveries about the nutritional value of meat have been made in the past fifteen years. Credit goes to research scientists in universities, in government service and in privately financed laboratories of industry, such as Swift's Research Laboratories.

The more people we can tell the above facts, the better for all of us. First, people who eat meat and other protein foods regularly will be healthier. Next, with ample meat in their diet, they'll get more benefit from cereals, fruits and vegetables and *other* foods they eat. Of course, the more meat that's eaten, the better the demand for meat, the better the market for livestock.

Swift & Company has often said, "Nutrition is our business." It's yours, too! So when you talk with your friends and neighbors, *tell them these facts about "meat, the miracle food."* We will continue to tell them, too, by our advertising; and by passing along to them the findings of our Research Laboratories and Martha Logan Test Kitchens.

Every livestock producer and meat packer has a vital public interest and a private personal interest in promoting better nutrition in America. Let's work together in promoting it!

Martha Logan's Recipe for

PORK AND NOODLES

(Yield: 5 servings)	4-oz. pkg. noodles
1 lb. grd. pork	2 qts. boiling water
1 egg	½ cup diced green pepper
Seasoning	1 cup diced cooked rutabaga
Flour	2 tbsps. shortening

Combine pork, egg, and seasoning. Form into 1-inch balls. Roll in flour. Brown in hot fat. Boil noodles in salted water 10 minutes. Drain. Combine noodles, green pepper, and rutabaga. Place in greased 2-quart casserole. Place pork balls on top. Bake in a moderate oven (350° F.) about 40 minutes or until pork is well done.

Swift & Company
UNION STOCK YARDS, CHICAGO 9, ILL.

Nutrition is our business—and yours

Farming as a Business

H. B. Howell, *Ext. Farm Management Specialist*
Iowa State College, Ames, Iowa

H. B. Howell

Good farm planning anticipates changes. It includes not only decision on how to use available resources—your land, labor, and capital to produce an income—but also how to use the income after it is produced.

Records kept on 51 Iowa farms (160 acres each) in 1948 reveal some fundamentals of successful farming:

1) Production or volume of business is of first importance. The high 17 farms averaged $14,000 production per man; the low 17 farms only $7,800.

2) The top farms used a combination of all resources—not just some of them—to get the greatest return. They fed enough grain to make efficient use of roughages; kept enough land in sod to maintain fertility; raised enough livestock and crops to keep man power fully employed; had enough machinery to do the work efficiently.

3) Good practices paid dividends. The best 17 farms produced $177 worth of livestock for each $100 worth of feed fed, while the comparable return was only $117 on the low 17 farms. Top farms averaged 87 bu. of corn per acre; low farms only 67 bu. Good practices can easily increase crop yields and feed returns by 20%.

4) Farm records, such as used in this study, help measure results; show up weak spots and make a sound basis for planning ahead. Your state extension service can help you set up the proper records for your farm or ranch.

OUR CITY COUSIN

"Gee, Country Cousin, 'tain't no joke . . . Old Nell's afire. She's breathing smoke!"

Where the Meat Goes

It's a large country, this United States . . . with close to 150,000,000 people in it. They live on 5,859,169 farms and ranches, and in about 125,000 cities and towns. Most of these millions of people want meat. Last year they ate an average of 146 pounds of it apiece. That adds up to over *twenty billion pounds*—to be distributed all over the 2,977,128 square mile length-and-breadth of our country.

That's a man-size job. To handle it takes the services of over 4,000 meat packers (including Swift & Company) and 14,000 other commercial slaughterers of livestock in the United States. The average 1000-mile gap between where the livestock is produced and where the meat is eaten must be bridged. One end of our "bridge" reaches west of the Mississippi, where two-thirds of the meat animals are produced. The other end reaches the markets to the east, where two-thirds of the meat is consumed.

But that's only *one* of the jobs we do. Another important one is to match up the nationwide supply against the nationwide demand. From day to day the numbers and grades of animals marketed vary greatly (which accounts largely for the day-to-day ups and downs in livestock prices). Also from area to area the people's meat preferences vary greatly. In New York and Boston they want heavy beef cuts. Pork eaters in Los Angeles and Baltimore prefer the lighter, leaner cuts. And so it goes, all over the map. It's an important part of our job to see that the various grades of meat and kinds of cuts go where there is the highest preference and most demand for them. Thus Swift & Company renders a twofold service—both by bringing to consumers the kind of meat they want, and by bringing to producers the benefit of a nation-wide demand.

F. M. Simpson

Agricultural Research Dept.

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MECHLING'S—General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
PENICK—S. B. Penick & Co., 50 Church St., New York 7, N. Y.
PRENTOX—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N. Y.
RAT-TROL—Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
RAT-TU—Nott Mfg. Co., Mt. Vernon, N. Y.
TAT FORMULA 83—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

ARSENIC

ARSENIC TRIOXIDE—Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis, Mo.

CALCIUM CYANIDE

CYANOGAS—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.

CHLOROPICRIN

LARVACIDE—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.

METHYL BROMIDE

DOW—Dow Chemical Co., Midland, Mich.
ESTON—Eston Chemicals, Inc., 3100 E. 26th St., Los Angeles 23, Calif.
MASTER BRAND—Innis, Speiden & Co., 117 Liberty St., New York 6, N. Y.
PESTMASTER—Michigan Chemical Corp., St. Louis, Mich.

PHOSPHORUS

BLUE DEATH—Bonide Chemical Co., Utica, N. Y.

RED SQUILL

CCC RAT DESTROYER—Carbola Chemical Co., Inc., Natural Bridge, N. Y.
DETHDIET POWDER and RODINE (Liquid)—S. B. Penick & Co., 50 Church St., New York 7, N. Y.
FORTIFIED—R. J. Prentiss & Co., Inc., 110 Williams St., New York 7, N. Y.
LENZ—National Agricultural Supply Co., Ft. Atkinson, Wis.
MILLER—Miller Chemical & Fertilizer Corp., 1000 S. Caroline St., Baltimore 31, Md.
RAT-NOTS—Nott Mfg. Co., Mt. Vernon, N. Y.
TOPZOL—Bonide Chemical Co., Utica, N. Y.

SODIUM FLUOROACETATE (1080)

COMPOUND 1080—Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.

STRYCHNINE

SANASEED—Bonide Chemical Co., Utica, N. Y.

STRYCHNINE SULPHATE

KILMICE, MOUSE-NOTS and MOLE-NOTS—Nott Mfg. Co., Mt. Vernon, N. Y.

THALLIUM

ANT-ZIX—Bonide Chemical Co., Utica, N. Y.
NOTT'S RAT PASTE—Nott Mfg. Co., Mt. Vernon, N. Y.
TAT MO-GO, TAT ANT TRAPS and TAT ANT BAIT—O. E. Linck & Co., Inc., Rt. 6 & Valley Rd., Clifton, N. J.

SEED DISINFECTANTS

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ARASAN—(For corn, sorghums, peanuts, soybeans, etc.) Thompson Hayward Chemical Co., 2915 Southwest Blvd., Kansas City 8, Mo.
BULB PROTECT—(Protects bulbs from fungi and rodents) Plant Products Corp., Blue Point, L. I., New York.
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2% CERESAN—(For cotton and pea seeds) E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
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CERESAN M—(For control of stinking smut in wheat) E. I. DuPont de Nemours & Co., Inc., Grasselli Chemical Dept., Wilmington, Del.
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CORONA COPPERCARB NO. 20—(For wheat and sorghum) Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
CORONA COPPERCARB NO. 50—(For wheat) Pittsburgh Plate Glass Co., Corona Chemical Div., Milwaukee 1, Wis.
CORROSIVE SUBLIMATE—(For potato seeds) Millmaster Chemical Corp., 420 Lexington Ave., New York 17, N. Y.
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DAMP-TOX—(Prevents damping off) Doggett-Pfeil Co., Springfield, N. J.
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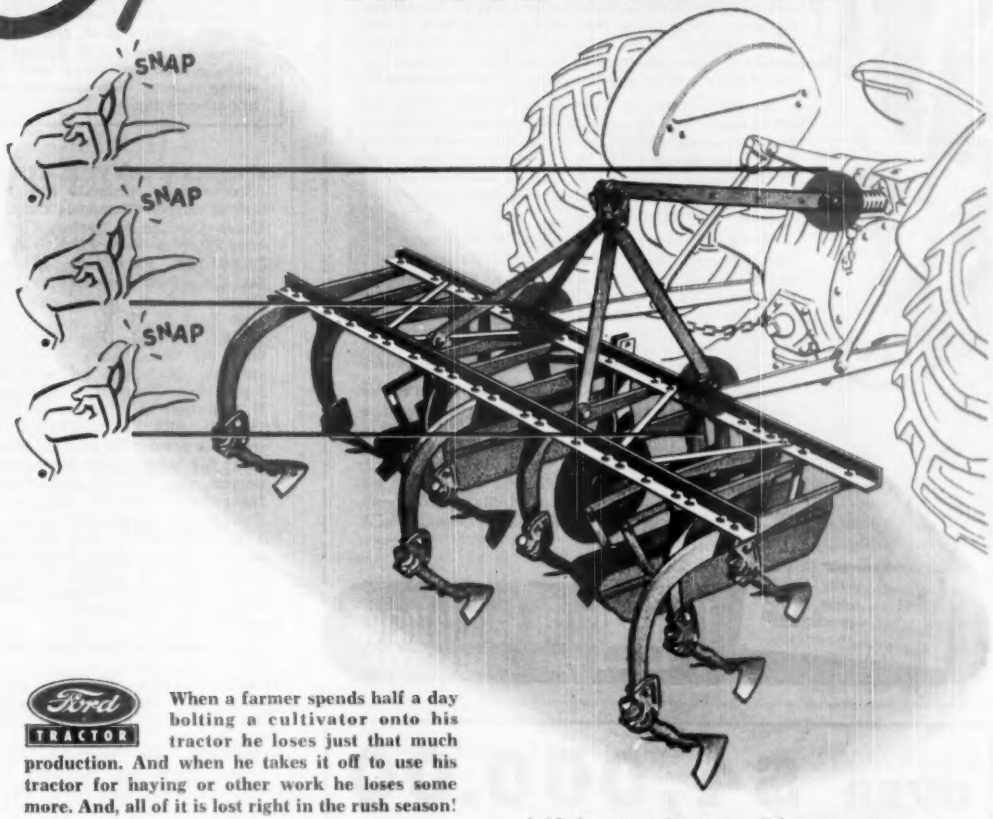

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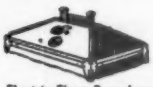
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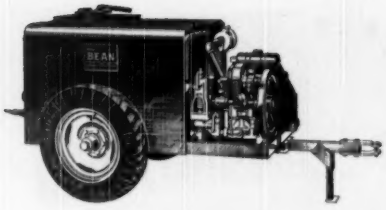

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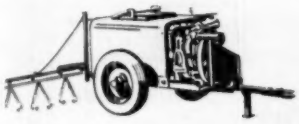

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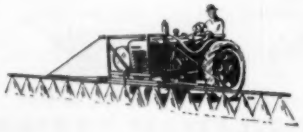

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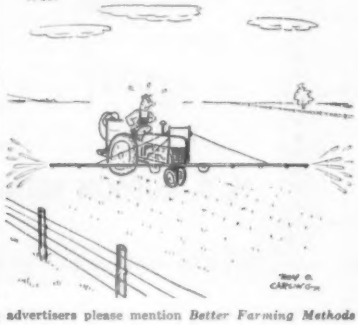

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O. W. Kromer Co., 1120 Emerson Ave., N., Minneapolis, Minn.
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Massey-Harris Co., Quality Ave., Racine, Wis.
F. E. Myers & Bros. Co., Ashland, O.
Super Six Mfg., Inc., 4026 Washington Ave., N., Minneapolis 12, Minn.

SPRAYERS (Hand)

Includes hand atomizers, used for household and dairy; compressed air and knapsack, used for garden work, and to supplement power sprayers; bucket, barrel and wheelbarrow, hand operated, for other limited spraying operations requiring higher pressures.

John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.
Besler Corp., 4053 Harlan St., Emeryville, Calif.
Buffalo Turbine Agricultural Equipment Co., Inc., Gowanda, N. Y.
Champion Sprayer Co., 6509 Heintz Ave., Detroit 11, Mich.
Dobbins Mfg. Co., Elkhart, Ind.
Evans Orchard Supply Co., 305 Delaware, Kansas City, Mo.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Hardie Mfg. Co., Hudson, Mich.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago 11, Ill.
O. W. Kromer Co., 1120 Emerson Ave., N., Minneapolis, Minn.
Macks Anti-Weed Gun, Caldwell, Idaho
F. E. Myers & Bros. Co., Ashland, O.
National Agricultural Supply Co., Ft. Atkinson, Wis.
Super Six Mfg., Inc., 4026 Washington Ave., N., Minneapolis 12, Minn.

SPRAYERS (Electric)

For applying insecticides in farm buildings and greenhouses, etc.

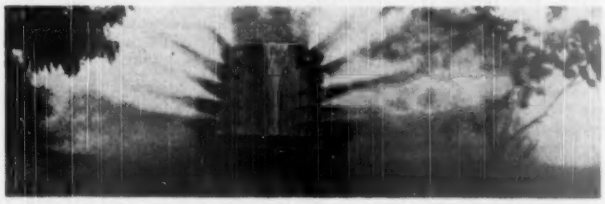
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago 11, Ill.
F. E. Myers & Bros. Co., Ashland, O.
National Agricultural Supply Co., Ft. Atkinson, Wis.
Sprayer Corp. of America, 1712 Payne St., Evanston, Ill.

SPRAYERS (Orchard—Gun Type)

Conventional high pressure, high capacity equipment used by commercial orchards and nurseries, and for ranch cattle grub control and range brush control work.

John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.
Besler Corp., 4053 Harlan St., Emeryville, Calif.
Buffalo Turbine Agricultural Equipment Co., Inc., Gowanda, N. Y.
Champion Sprayer Co., 6509 Heintz Ave., Detroit 11, Mich.
Dobbins Mfg. Co., Elkhart, Ind.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Field Force Mfg. Co., Inc., Phoenixville, Pa.

Look Into the *HALE CENTRIFUGAL* Sprayer!



Because it represents a great improvement in the Spray Equipment Field, careful buyers are finding it well worthwhile investigating the new HALE CENTRIFUGAL Sprayer pictured in action above. Now available.

Send for bulletin No. 303 on this thoroughly tested Hale Sprayer with Centrifugal Pump. Capacities up to 100 GPM at 600 lbs. pressure. Ample reserve.

Dealer Inquiries Invited.

HALE FIRE PUMP COMPANY

CONSHOHOCKEN, PA.

Corona

Insecticides and Fungicides
Your insurance for better crops

"Corona Dry" Arsenate of Lead • Corona Calcium Arsenate • Coromate Corothion • Corozate • Corona MICRONIZED Dusting and Wettable Sulfurs Corona MICRONIZED DDT • Corona 25% DDT Emulsion • Corona "53" Corona "26" • Corona Tree Wound Dressing • Corona Agricultural Dusts

Corona Chemical Division

PITTSBURGH PLATE GLASS COMPANY

PAINTS • GLASS • CHEMICALS • PLASTICS • BRUSHES

MILWAUKEE 1, WISCONSIN

Hale Fire Pump Co., Conshohocken, Pa.
Hanson Chemical & Equipment Co., Beloit, Wis.
Hardie Mfg. Co., Hudson, Mich.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago 11, Ill.
O. W. Kromer Co., 1120 Emerson Ave., N., Minneapolis, Minn.
Lawrence Aero-Mist Sprayer Co., Inc., 58 Federal St., Greenfield, Mass.
Love Tractor, Inc., Eau Claire, Mich.
F. E. Myers & Bros. Co., Ashland, O.

SPRAYERS (Mist Type)

New type sprayer used for applying chemicals in concentrated form—primarily for commercial orchard, shade tree or truck crop work.

John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.
Besler Corp., 4053 Harlan St., Emeryville, Calif.
Buffalo Turbine Agricultural Equipment Co., Inc., Gowanda, N. Y.
Dobbins Mfg. Co., Elkhart, Ind.
Evans Orchard Supply Co., 305 Delaware, Kansas City, Mo.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Friend Mfg. Co., Gasport, N. Y.
Hardie Mfg. Co., Hudson, Mich.
Lawrence Aero-Mist Sprayer Co., Inc., 58 Federal St., Greenfield, Mass.
F. E. Myers & Bros. Co., Ashland, O.
Sprayer Corp. of America, 1712 Payne St., Evanston, Ill.

SPRAYERS (Liquid-Duster Type)

New type of equipment which may be operated as a mist sprayer or as a wet duster. Used to date primarily in commercial orchard or truck crop work.

John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.
Buffalo Turbine Agricultural Equipment Co., Inc., Gowanda, N. Y.
Evans Orchard Supply Co., 305 Delaware, Kansas City, Mo.
Lawrence Aero-Mist Sprayer Co., Inc., 58 Federal St., Greenfield, Mass.
Niagara Chemical Div., Food Machinery & Chemical Corp., Middleport, N. Y.

SPRAYING ACCESSORIES (Nozzles, Couplings, Guns, Hose, Rods)

John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.
Besler Corp., 4053 Harlan St., Emeryville, Calif.
Century Engineering Corp., Cedar Rapids, Ia.
Champion Sprayer Co., 6509 Heintz Ave., Detroit, Mich.
Dobbins Mfg. Co., Elkhart, Ind.
Evans Orchard Supply Co., 305 Delaware, Kansas City, Mo.
Farnam Equipment Co., 2828 Grand Ave., Phoenix, Ariz.
A. B. Farquhar Co., 142 N. Duke St., York, Pa.
Field Force Mfg. Co., Inc., Phoenixville, Ariz.
Friend Mfg. Co., Gasport, N. Y.
Hanson Chemical & Equipment Co., Beloit, Wis.
Hardie Mfg. Co., Hudson, Mich.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago 11, Ill.

Free "Ag" Chem. Booklets

The Shell Chemical Co., 500 Fifth Ave., New York, N. Y., and 100 Bush St., San Francisco 6, Calif., is making the following booklets available to agricultural leaders:

1. **"You'll Do Better With D-D" (Soil Fumigant)**
2. **"More Tobacco With D-D"**
3. **"Shell Weedkiller 10"**
4. **"Shell Weedkiller 11"**
5. **"Shell Weedkiller 20"**
6. **"Shell Weedkiller 30"**
7. **"Shell Weedkiller 40"**
8. **"Shell Weedkiller 130"**
9. **"Shell Resitoxaphene 60"**
10. **"Shell Bladex F-2"**
11. **"Shell Resitox D-25" (DDT)**
12. **"Shell Vapona"**
13. **"Shell Vapona ID-045" (Mixture)**
14. **"Shell Tree Sprays"**
15. **"Shell Mosquito Control"**
16. **"Shell Grape Sprays"**
17. **"Shell Endrop" (Hormone Spray)**

O. W. Kromer Co., 1120 Emerson Ave., N., Minneapolis, Minn.
Livestock Sprayer Mfg. Co., 771 Coleman Ave., San Jose, Calif.
Macks Anti-Weed Gun, Caldwell, Idaho
F. E. Myers & Bros. Co., Ashland, O.
National Agricultural Supply Co., Ft. Atkinson, Wis.
Spraying Systems Co., 3201 Randolph St., Bellwood, Ill.

TARPAULINS (For Fumigation)

Used primarily in orchard pest control work to confine the chemical to a tree being treated.

C. H. Dana Co., Inc., Hyde Park, Vt.
Fulton Bag & Cotton Mills, Atlanta, Ga.
H. T. McGill, 3814 Burch, Houston 3, Tex.
National Agricultural Supply Co., Ft. Atkinson, Wis.
H. Wenzel Tent & Duck Co., St. Louis 4, Mo.

★

Methods of Applying Fertilizer

(*Continued from page 17*)

common practice. Solutions of fertilizer also are applied as preplanting applications and as side dressings or top dressers for growing crops. Young plants are easily injured by highly concentrated fertilizer solutions so care should be taken when applying fertilizer in solution form.

TOP DRESSING: Applying fertilizer on the surface of the soil for pasture, grassland, small grain, tree fruits and other crops.

IRRIGATION: Adding soluble fertilizers to irrigation water.

VARIATIONS: Variations and combinations of these methods are often used. Part of the fertilizer is sometimes placed on fields by broadcasting, the remainder drilled in or banded; some may be plowed under, the rest broadcast after plowing.

A new development is the direct application of anhydrous ammonia to the soil. This requires special equipment to withstand the pressure necessary to keep the ammonia in liquid form.

The above article and photographs are from "Our Land and Its Care," published by the American Plant Food Council, 910 17th St., N.W., Washington 6, D.C. —Editor

★

4-H Club Congress

(*Continued from page 8*)

Many assemblies were held in the exhibition hall of the Stevens Hotel to discuss the congress theme, "Better Living For a Better World."

Keynote speakers were heard each day. Following the formal talks, delegates formed into small discussion groups to formulate their own ideas. Problems and questions from these small groups were then discussed by the entire assembly.

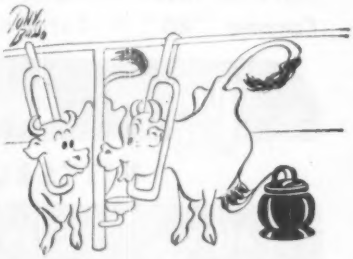
Attend Livestock Exposition

Leaders and delegates attended a matinee horse show at the International Livestock Exposition. Later in the evening the entire group assembled in the arena of the amphitheatre in the 4-H club parade. Wallace Kadderly, past president, National Association of Radio Farm Directors, was narrator for this presentation.

Following the Sears-Roebuck breakfast in the Grand Ballroom, leaders and delegates adjourned to the 8th Street Theatre, where they saw the premiere showing of the 16 mm. film, "4-H Headlines." This new film is sponsored by the New Idea Farm Equipment Co., and is distributed by the Venard Organization, Peoria, Ill.

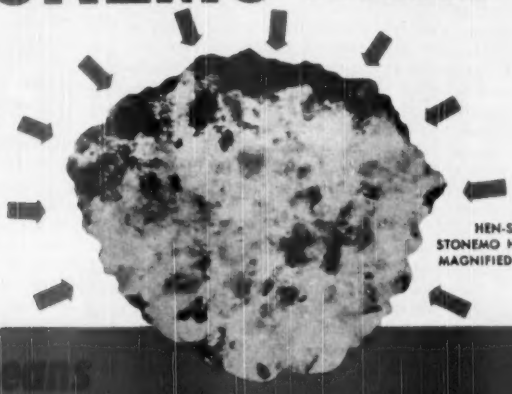
You cannot attend a club congress and not be impressed with its color and splendor—all of which requires work. It takes 24 committees, in addition to the capable staff of the National Committee, to put on the congress. This does not include the manpower provided by the sponsors of the congress banquets. To all these fine people, we give an orchid salute for a good job well done.

★



"Remember the good old days when we could kick over a pail once in a while?"

Look at the EXTRA GRINDING SURFACES *on* STONEMO HARD GRIT!



HEN-SIZED
STONEMO HARD GRIT
MAGNIFIED 9½ TIMES

This means POULTRY GRIND GRAINS AND GRASSES RIGHT ON THE FARM—*feed costs are reduced!*

One glance at the photo above shows why it pays farmers—particularly in the grain areas—to use STONEMO!

Note the multiple, rough, hard, sharp-cutting surfaces!

This is the hard, insoluble GRIT that helps chickens and turkeys *grind* grains and grasses! It is the GRIT that's especially needed in the grain areas—where poultry frequently are on range and where farmers often feed their own grains.

STONEMO lets farmers in the grain areas make effective use of their ranges for foraging, and enables the birds to grind their own feed right on the farm.

STONEMO goes to work inside birds' gizzards—*stays* hard—won't dissolve—won't upset mineral balance of ration—*does* the job it's made for: *grinding feed.*

Learn all the facts about STONEMO. Write for our special Vo-Ag County Agent Kit.

FREE! **VO-AG COUNTY AGENT KIT**

Includes special "Question and Answer" Bulletin which gives you many helpful facts about grit. Send for yours. Address Dept. BFM-1.

STONE MOUNTAIN GRIT CO.

Lithonia, Ga. Barre, Vt.

Make this test!

There is often confusion in the minds of farmers about soluble vs. insoluble grit. Make this test. Drop some of the "grinding agent" your farmers are using in a glass of vinegar. If it fizzes or bubbles, that means it's soluble—will dissolve—change the mineral

balance of rations—and should not be used as a grinding agent! Now—try STONEMO! See the difference.

New Developments in Chemicals

(*Continued from page* 14)

special consideration due to the various factors concerning them, and their possibilities for future use. The first of these is lindane, which is the technically pure gamma isomer of benzene hexachloride. This pure gamma isomer form of benzene hexachloride was found to have lost the objectionable odors of the commercial material, but to have retained all of the insecticidal properties. It has developed into a most useful insecticide having all of the characteristics, and effective on as wide a range of insects as the parent compound. It does not leave poisonous residue of a serious extent as it breaks down rapidly and does not accumulate in the body tissues at levels that would be dangerous. DDT, for comparison, was found to accumulate in body tissues at ten times the proportion of the amount taken in. The lindane accumulates only about in proportion to the amount taken in and is eliminated more rapidly. This, therefore, makes it possible to use lindane on many crops without leaving poisonous residue.

To a slight extent there is some danger of tasting to fruits and vegetables nearing maturity, so that some regulation as to time of application is necessary. This does not, in general, inhibit the use of the material. Lindane was just recently released for use as a fly control around dairy barns and other areas where the use of DDT was restricted, due to its possible contamination of milk and other foods. This is a point very much in favor of lindane.

In addition, lindane has excellent application to general insect control in agricultural crops. It has had wide usage in commercial pest control, such as flies, roaches and other sanitation insects. It is being developed widely in the use of seed treatment for wireworm control and points well to be one of the best over-all insecticides, and the most widely adaptable of the recently introduced materials.

TEPP Is Non-Stable

The second of the new insecticides developed in recent years, which has excellent possibilities, is tetraethyl pyrophosphate which was originally introduced as hexaethyl tetraphosphate. This is an excellent insecticide for control of aphis and red spider mites; it will also kill leafhopper nymphs, thrips and some other insects. The chief value of this insecticide is the fact that it is nonstable, being rapidly broken down by action of water or moisture on the plants and exposure to air.

The material is ineffective a few hours after dilution or application; there is no poisonous residue left after its use on treated plants. For that reason it is possible to use tetraethyl pyrophosphate

sprays or dusts up to within a day or two of harvest time and to harvest and use the crops without danger of poison residue or food contamination. This bids well to make it a most important material. Large tonnages of it have been used as dust and spray forms in agricultural areas during the past several years and there are indications that its volume will tend to increase.

The material is adaptable to use with other insecticides such as DDT and lindane, and is generally compatible and has found wide usage in agricultural insecticide fields. Although the material in concentrate form is a poison, somewhat on the order of nicotine alkaloid, it is not as readily absorbed through the skin as other phosphate materials or as nicotine. It is highly dangerous when taken by mouth or into the blood stream.

In general, this lack of skin absorption makes it safer to use in insecticide work, and the fact that it is used in dilute quantities, such as a pint of liquid concentrate to 100 gallons of water or as 1 per cent tetraethyl pyrophosphate in dust formulations, makes the material quite safe in application. The several years' usage of this material in general agricultural usage in the result of thousands of gallons of liquid spray applied, and thousands of custom dusts applied, has never resulted in any fatalities to persons working with the material. This is an excellent point in its favor.

Weed Killers Boom to Agriculture

In addition to the insecticides introduced during the past few years there have also been wide scale developments in hormone weed killers such as 2,4-D and 2,4,5-T. The 2,4-D materials are an excellent boon to agriculture in their possible use in control of weeds in grain crops, and many other areas where weed control was previously costly and not too dependable. The corn growing areas have also profited by development of this material. It bids well to become one of the most important agricultural chemicals in the country.

New developments have also taken place in weed killer work; especially in the control of waterweeds in irrigation ditches and farm areas. This work, sponsored by the U. S. Bureau of Reclamation and California Research Corporation, has developed into the use of xylene type solvents with emulsifying agents which are put into the water at 300 to 500 parts per million. The solvent type material kills the waterweeds on contact, and the solvent is rapidly evaporated. This is one of the most interesting of the newer developments in agricultural chemicals.

Work Being Done on Defoliants

Developments have also taken place along the lines of defoliants for use on cotton and other crops. Ammonium Thiocyanate is one of these, and no doubt others will follow which will make the general defoliation of cotton possible, where it is desired to facilitate picking.

These rapid changes and developments have kept the insecticide industry and agricultural chemical manufacturers on their toes, and the testing, development and investigational work on these materials has been a very large order. Work on many of them is still progressing and more information will be available on most of these materials in the months to come, as new uses and new facts concerning their use are brought out by experiment stations, commercial and other investigational workers.

★

Club Agents Convention

(*Continued from page* 16)

in order to change the voting of convention delegates.

The Kellogg Company was host at a luncheon, and a breakfast was given for club agents by Wilson & Company.

Four-H agents had a joint meeting with the National Association of County Home Demonstration Agents. The two groups discussed the topic, "Family Life."

Since the club congress was also held at the Stevens Hotel, most of the club agents had an opportunity to work some of the congress activities into their busy calendar of events.

A list of committees for 1950 will be published in the February issue of Better Farming Methods.

★

Cut Weeding Costs

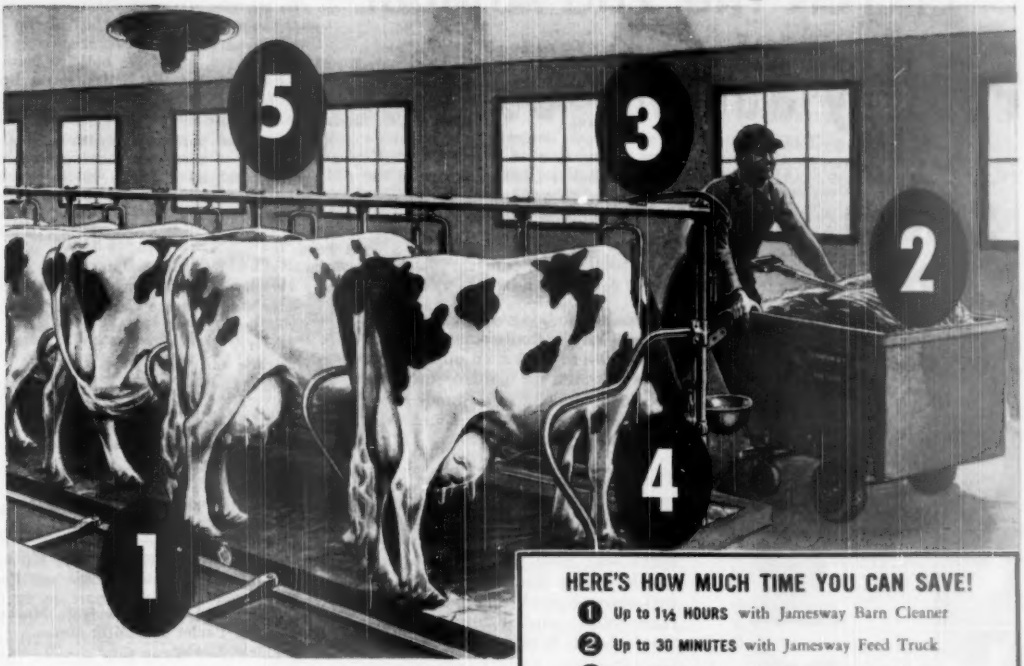
Some Indiana onion growers are cutting their weeding costs as much as 80 percent by the use of chemical weed killers this season. Until recently, the production of onions required more hand labor than any other important Indiana vegetable crop.

Although developments have been rapid in the mechanization of the harvesting of the crop, there has been a close race with the field of weed control. N. K. Ellis, Purdue University, reports that the cost of weeding an acre of onions at present wage levels by the usual methods has cost from $50 to $150.

Cut Chore-Time Drudgery

UP TO 3 HOURS A DAY

with Jamesway



HERE'S HOW MUCH TIME YOU CAN SAVE!

1. Up to 1½ HOURS with Jamesway Barn Cleaner
2. Up to 30 MINUTES with Jamesway Feed Truck
3. Up to 30 MINUTES with Jamesway Stanchions
4. Up to 30 MINUTES with Jamesway Water Cups
5. Up to 15 MINUTES with Jamesway ventilation

Yes, now you can save up to 3 hours every day of the year with Jamesway's modern, time-saving equipment. It takes the hard, back-breaking work out of your chores. Makes it easier for you to give your herd extra attention. Helps you produce more milk, cleaner milk . . . increase your dairy profits.

Stop in and see your Jamesway Dealer the next time you are in town. Find out how easy it is to modernize your barn with Jamesway plans and equipment. Mail coupon below for free time-saving folders.

See the Sensational NEW Jamesway Barn Cleaner with Patented Shuttle Action

New, sensational, pull-push barn cleaner frees you of daily barn drudgery! No more scooping, scraping . . . heavy lifting! With the Jamesway Barn Cleaner, you just flip the switch!

It cleans your barn cleaner. Amazing new shuttle action whisks manure from gutter *straight* to spreader. No endless gutter chains to wear out or break. Cleaning paddles fold against steel gutter bar . . . leave gutter clear when not in use. Ask your dealer for a free demonstration. You'll see why the Jamesway Barn Cleaner is the leader.

It's easy to install a Jamesway Barn Cleaner. It fits any gutter — any barn. No indoor pits or cross-gutters to collect filth. Shielded drive unit sets outside. No wasted stall space.

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FT. ATKINSON, WIS. ELMIRA, N. Y. LOS ANGELES 33, CALIF.

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Please send literature on items checked. Tell me how to get FREE plans for my needs. I plan to build or remodel:
Dairy Barn ☐ Hog House ☐ Poultry House ☐

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World's Largest Makers of TIME-SAVING EQUIPMENT for Cows, Hens, Hogs

Be Sure . . .

Your Vo-Ag Classes and 4-H Club Members ENTER the 2nd Annual

Poultry Judging Contest

$300 IN PRIZE MONEY

All Vo-Ag students and 4-H Club members in the United States are invited to participate in the Second Annual Poultry Judging Contest, sponsored jointly by Poultry Tribune (for area east of Rockies) and Pacific Poultryman (for seven west coast states).

You'll find these poultry judging contest pages in Poultry Tribune and Pacific Poultryman valuable teaching aids, in addition to having an opportunity to win cash prizes. Contest is divided into two divisions; under 21 in Junior Class and those 21 and over will be in the Senior Class.

The December, January and February issues of Poultry Tribune and Pacific Poultryman will contain judging contest pages as follows: December issues will have White Rocks and Rhode Island Reds; January issues will show Barred Rocks and New Hampshires; and February issues, Single Comb White Leghorns.

Reprints of the contest pages are available with complete rules and entry blanks for your Vo-Ag Classes and 4-H groups. Order as many entry blanks as you have students or club members you wish to enter. Contest closes February 15, 1950.

WEST COAST . . . If you and your club members live in Pacific Poultryman area, the seven west coast states, including Washington, Oregon, California, New Mexico, Utah, Nevada and Montana, be sure to send to Palo Alto, California, for your contest reprints.

SPONSORED JOINTLY BY

Poultry Tribune & Pacific Poultryman

Mount Morris, Ill. Palo Alto, Calif.

Send for BFBA Building Plans

BETTER FARM BUILDINGS ASSOCIATION

EFFICIENCY THROUGH FUNCTIONAL DESIGN

To provide you with construction plans of the most up-to-date and efficient design, leading agricultural engineers, agricultural colleges, and farm building authorities have formed the Better Farm Buildings Association. To date, 21 plans are available from members of the association.

Check the plans for which you would like a list of companies having completed plans. Send all requests to Service Department, Better Farming Methods, Mount Morris, Ill.

The following plans are available.

- ☐ 20 Cow One-Story Dairy Barn.
- ☐ Two-Room Milk House.
- ☐ Insulated Tobacco Curing Barn.
- ☐ Poultry Laying House, 125 bird capacity.
- ☐ Garage and Work Shop.
- ☐ Single-Unit—T-Shaped Airplane Hangar.
- ☐ Multiple-Unit Airplane Hangar.
- ☐ Arched Brooder House.
- ☐ Colony Hog House.
- ☐ Cattle Feeding Shed.
- ☐ Machine Shed and Repair Shop.
- ☐ Multi-Story Poultry House.
- ☐ Gambel Roof Dairy Barn.
- ☐ General-Purpose Gothic Roof Barn.
- ☐ Refrigerated Apple Storage and Packing Room.
- ☐ Refrigerated Farm Roadside Market.
- ☐ Milking Parlor and Milk House.
- ☐ Walk-In Cooler.
- ☐ Potato Storage.
- ☐ Portable Hog House.
- ☐ Farm House (Three-Bedroom — One-Story).

New Chemical Booklet

The Columbia Chemical Division, Pittsburgh Plate Glass Co., has announced publication of a new booklet, "How to Use Columbia Paradichlorobenzene."

Procedures are outlined for the effective control of peach tree borers, tobacco blue mold, clothes moths, carpet beetles and cigarette beetles. An effective means of deodorizing drains, washrooms and rubbish with Para-dichlorobenzene is also treated in the booklet.

Copies of the booklet may be secured by writing to the Pittsburgh Plate Glass Co., Columbia Chemical Div., Fifth Ave. at Bellefield, Pittsburgh 13, Pa.

Greetings from the New NACAA President...

I am sure that the officers and committee chairmen of the National Association County Agricultural Agents will have the wholehearted support of the county agents for any program geared to the welfare of county agents and the betterment of extension work.

Rex Carter

No one county agent or state extension service has everything, but each can, if given the opportunity, contribute something worthwhile to the overall program. Thus, it would seem that one of the first essentials of the National Association County Agricultural Agents is to provide that opportunity.

It is the responsibility of the officers and committee members of the NACAA to continually be on the alert for new ideas and new programs that can be passed along to the group. Only by doing this can we fulfill our responsibilities for professional improvement.

Relations with the Association of Land Grant Colleges were never better than during the past year. Ernie Ryall and his committee have chartered a sound course. We must continue to recognize that the Land Grant Colleges are charged with the administrative responsibilities of extension work in their respective states.

As county agents, we represent the show window of the extension service. Not only are we close to the grass roots of agriculture but in our daily programs we are in almost continuous contact with the business and industrial leaders and workers of our respective counties. We are privileged to have the opportunity to tell the story of American agriculture to business, industrial and consumer groups and with it the story of extension.

It would appear that 1950 will offer ever greater opportunities for county agents to serve local farmers. We must be continually on the alert to recognize these opportunities and be prepared for the challenge and responsibilities they present.

I am sure that I speak for the officers and committee members of the NACAA when I say that we hope to so conduct the affairs of the association as to justify the confidence placed in us by our fellow county agents.

Committee appointments have been made to give each state and region representation based on membership in the Association. All of us solicit and welcome suggestions and recommendations.—Rex Carter, president, National Association of County Agricultural Agents.

Beet Seeds "Star" in Movie

Techniques used by scientists to solve research problems oftentimes are marvels of ingenuity. Two Colorado A & M College engineers, however, took an idea from Hollywood to help solve a problem concerning sugar beets.

The problem was unpredictable germination and seedling emergence of sugar beet seeds. Planting the tiny seeds—100 of them can be placed side by side along a ruler—a half inch too shallow or too deep may result in a spotty growth.

Maybe, the researchers figured, the seeds might "bounce" when dropped a few inches from the beet planter's seed tube openings into the furrow, and this would cause them to be displaced. But how to check such a bounce?

Borrowing from Hollywood, the two researchers used the germination problem as a script and sugar beet seeds were given "starring" roles in a slow motion movie production. Selected seeds were weighed and measured and given "make-up," consisting of aluminum paint so they would shine against the dark ground. The coated seeds were "photogenic," so to speak.

"Vehicle" for the production was a mechanical beet seed planter. A 16 mm. camera and battery-powered spotlights were mounted on the planter. "Takes" consisted of pictures of the aluminum-coated seeds as they hit the ground while the planter moved along the row. The tiny stars gave an excellent performance. Some of them "bounced" slightly when dropped from the planter but this movement was dismissed as negligible by the engineers. The movies, projected on a screen, provided a new tool in the study of some obscure factors involved in poor germination of seed.

★

Insects Cause Wheat Failure

False wireworms are one of the primary reasons for winter wheat failing to germinate in western Kansas, according to H. R. Bryson, Kansas State College entomology department.

Bryson states that the false wireworms follow drill rows, eating wheat seed too dry to germinate. In thickly-infested areas the worms also may damage some young wheat plants.

The pests are the worm-like stage in the life cycle of large darklin beetles. They are related to meal worms and flour beetles. They are about one inch long, light tan and waxy appearing. The adults cannot fly, as their wings are fused together.

Although control methods have not been perfected, treating wheat seed with benzene hexachloride or other poisons is believed to be effective.

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DAIRY BARN VENTILATOR

Fresh Dry Air **CAUSES COWS TO DRINK MORE . . PRODUCE MORE!**

FAN-PAC Ventilator, with built-in thermostat, *automatically* regulates both temperature and humidity in dairy barns. Fresh, dry air causes cows to drink more water . . . give more milk! FAN-PAC is easily installed, economical to operate. Two models available. High capacity model provides ventilation for 30 to 40 cows. Low capacity model is for 20 to 30 cows. For greater profits — investigate today! Mail coupon below.

SMALLER SIZE FOR POULTRY HOUSES

Healthier flocks! Better layers! Less litter changing! More pleasant working in hen house! FAN-PAC Poultry House Ventilator *automatically* regulates temperature and humidity for up to 250 mature hens. Install it yourself!

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Factors Affecting . . .

Spray Application

By O. W. KROMER
Member, ASAE

● TWO OF MAN'S most persistent enemies in his struggle for existence against nature have been weeds and insects.

In the last few years, insects have been gaining in this battle. For example, the crop loss in 1949 due to corn borer in the state of Minnesota has been estimated at 50 million dollars and in the state of Iowa, at 140 million dollars. The corn borer menace has spread entirely throughout the north central states, extending up into Canada.

O. W. Kromer

Science again comes through with a solution by developing two new allies for this fight—insecticides and herbicides. The present chemicals available for both of these uses are the result of years of laboratory and field research and test and are quite reliable, if properly applied at the correct time and in the recommended amounts. In this respect, herbicides are more sensitive than insecticides. It must be applied in very exact recommended amounts to kill the weeds and not affect the cash crop. The chemical must be applied at the proper growth stage of the weed when it is most susceptible and also at the stage when the cereal crop will be least affected.

It is understood that the greater the gallonage of the carrier fluid per acre, the easier it is to apply exact amounts of chemical. For example, ¾ of a pound of 2,4-D acid can be applied more accurately in 20 gallons of water than in two and one-half gallons, as the percent of variation for a given error is smaller. The tendency in the past season has been for higher gallonage applications—in the neighborhood of eight to 10 for field crops and pastures, 20 to 25 for highways and railroad right-of-ways, and 35 to 50 for corn borer control.

Where water is scarce, these gallonages are reduced. Higher gallonage application gives a more thorough spray coverage of the plant and a spray which is less affected by drift due to wind and vaporization.

Factors which affect the uniformity and rate of spray application are as follows: 1. Nozzle spray pattern; 2. Boom and hose capacity; 3. Pressure variations; 4. Rate of travel; 5. Spray swath overlap or skip; 6. Chemical and water mixtures; 7. Boom swing and spray height, and 8. Wind and climatic conditions.

Variations in any of these items can seriously affect the results of a spray application. A combination of variations in the above spray factors can burn the crop or fail to kill the weeds if the variations are all in one direction. It is apparent that a standard must be set and maintained for the above so the farmer can use his sprayer with confidence.

Nozzle Spray Pattern

Nozzles used in a spray boom should have a spray pattern that will blend in with adjoining nozzles to give a uniform coverage. In this respect, it has been found that a nozzle with a wide spray angle, with the heaviest discharge directly below the nozzle and tapering off uniformly in volume to the outer edge of the spray fan, will blend in with adjoining nozzles to produce a uniform application much better than a narrow spray angle nozzle with a uniform spray pattern throughout. The wide spray angle nozzle has better penetration into dense foliage and the uniformity of application is much less affected by variations in boom height.

All nozzles in a boom should deliver the same volume. To do this, the discharge orifice must be accurate and must maintain its accuracy. Nozzles with sharp-edged, oval-shaped discharge orifices of soft brass will wear rapidly. This increases their rate of discharge and decreases the spray angle.

Nozzle screens should have mesh openings only slightly smaller than the nozzle orifice. This will permit fine particles to pass through. There is no advantage in holding them back to plug the screen. The screen should be of heavy wire or perforated sheet so that it can be cleaned without damage.

Boom and Hose Capacity

Boom and delivery hose should be of sufficient size so that the pressure drop within the boom is not excessive. Otherwise, the nozzles farthest from the inlet hose will not deliver the same quantity of spray solution as the nozzle nearest the inlet hose. In this respect, larger inside diameter booms and hoses have less pressure drop and can be used to apply higher gallonage when necessary. Many sprayers do not have the capacity

to apply over 10 to 15 gallons per acre and cannot do this with uniformity.

Pressure Variations

Pressure variations are caused by changes in pump speed. These can be corrected only by a sensitive spring-loaded pressure regulator. This allows excess fluid to be by-passed and it can be used for agitation. A spring-loaded, ball-type high pressure relief valve will not function correctly as a pressure regulator. A hand-operated, by-pass valve is also unsuited for this purpose.

Rate of Travel

The rate of travel may be held fairly constant on level ground with a throttle-governed engine. However, when spraying with a pickup truck or other vehicle with a foot throttle speed control or in hilly territory with a throttle-governed unit, the speed will vary considerably. This brings out the need for a suitable low-speed speedometer for maintaining exact ground travel speed. If such a unit also had a total mileage and trip indicator, it would be possible to determine the acreage sprayed by multiplying the mileage readings by a constant which would be a factor of the boom length.

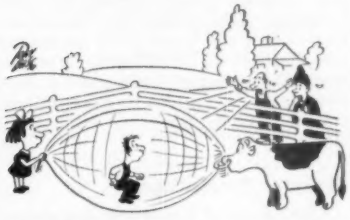
Spray Swath Overlap

Spray swath overlap or skip, either over-doses the crop or fails to kill the weeds. This could be eliminated by means of a suitable marker on the ends of the spray boom. Wheels, skids, etc., on the end of the boom are not satisfactory, in that the marks left by them cannot be seen by the operator on the next trip around. It appears that a suitable dye marking on the end of the boom should do the job and will probably be developed.

Chemical and Water Mixtures

Variations in the chemical and water mixture are caused by improper labeling of the chemical, making it difficult for the operator to figure the amount to add to obtain a certain mixture; or by not measuring the amount of water correctly when adding it to the solution, or due to improper calculation of the amount of chemical required. To simplify the

(*Continued on page 82*)



"For Pete's sake, drop that rope and get over here."

COUNTY AGENTS—FARMERS—AGRICULTURAL COLLEGE TEACHERS SHOULD KNOW ABOUT THIS NEW SPRAYING—DUSTING METHOD

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High velocity turbulent air, produced by Buffalo Turbine's exclusive axial flow blower, atomizes sprays—dusts—concentrates into micro particles, completely blanketing large areas in *one pass.*

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- Cuts Out 90% Water Deadweight
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4. Nozzle velocity controlled by engine speed.
5. Spray and dust density are easily controlled.
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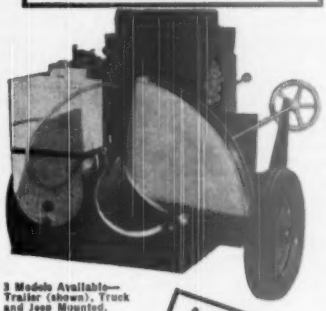

3 Models Available—Trailer (shown), Truck and Jeep Mounted.

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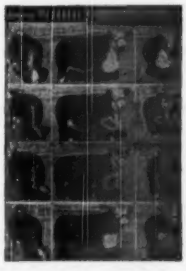
Judging Pictorials



Judging pictorials, which have been featured in Better Farming Methods, are available to county agents, vo-ag teachers and other agricultural leaders.

Each judging pictorial usually consists of four different animals. Two or three different views of each animal are pictured. Placings are provided for all pictorials. Reasons for placings are available for many of the pictorials. These judging pictures provide suitable judging practice for FFA and 4-H members.

We now have judging pictorials of New Hampshires (chickens), Guernsey Cows, Jersey Cows, Holstein Cows, Shorthorn Bulls, Shorthorn Heifers, Hampshire Ewes, Polled Hereford Heifers, Percheron Horses, Berkshire Gilts, Angus Cows, Milking Shorthorn Cows, Brown Swiss Cows, Columbia Ewes, Hampshire Gilts, Hereford Heifers, Yorkshire Gilts, Southdown Market Lambs, Duroc Jersey Barrows, Shropshire Ewes, Tamworth Gilts and Brahman Heifers. Price 5 cents each.

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★

Sprayers and Dusters in 1950

(*Continued from page* 15)

the speed of the pulling unit, and may be used for stationary jobs such as spraying livestock or buildings, releasing the tractor for other work.

Tractor-mounted, tractor-powered sprayers, first produced during the war, are also available with certain improvements in pumps and booms and are useful for specialized jobs such as weed spraying.

Equipment for Small Farms

Power equipment for the small or specialty farm includes the wheelbarrow sprayer and the small skid or wheel-mounted units. The wheelbarrow sprayers have tank capacities of from 12½ gallons to 18 gallons and are powered by either a gasoline engine or an electric motor. The small two-wheel sprayers with tank capacities of 25 to 50 gallons may be moved by hand or when supplied with a hitch, moved by truck, tractor or car. Booms for row crop or field spraying are also available for these units to provide complete versatility for small farms or to supplement larger sprayers on other farms.

Hand Sprayers Are Essential

The compressed air or knapsack hand sprayer, commonly used on thousands of farms for many years, is as essential on the average farm today as a pitchfork. For those still skeptical of the use of spray chemicals, the hand sprayer offers an inexpensive means of experimenting. On many farms where spraying is a well established practice, the hand sprayer serves as a useful supplement to the power sprayer in handling many small spraying jobs in fence corners, in the garden or lawn, and around the livestock and buildings. Sizes range from 2 to 6 gallons tank capacity and models are now available with rechargeable CO_2 cylinders which require no hand pumping. Bucket and barrel hand pumps are also available for limited spraying operations. The two- and three-quart continuous sprayers are also used extensively for applying fly sprays on small dairy herds.

Spraying Precautions

Since many of the new chemicals are applied in relatively concentrated form, they should be carefully used for best

results. Follow the recommendations of your state agricultural college in selecting the chemicals and read and carefully follow the instructions on the chemical container label. Do not overdose! After using the weed killing chemicals be sure to *thoroughly clean* the equipment before using it for applying other chemicals on susceptible crops. Complete recommendations for cleaning equipment are contained in the USDA Bulletin No. 2005, *"Using 2,4-D Safely."*

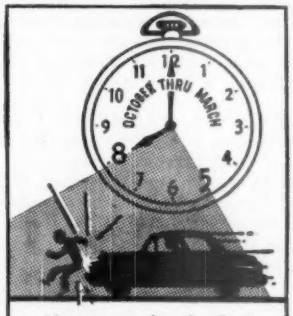
Dusters Handle New Chemicals

Power and traction dusters used for insect and plant disease control have also been improved to handle the new chemicals now available. Desirable features include an accurate adjustable feeding mechanism in the dust hopper, a distribution system which discharges uniform quantities of dust from each outlet, and dust proof bearings. Models are available, powered either by a separate engine or by the tractor power-take-off shaft.

Automatic discharge equipment is now available on new models of orchard sprayers and as attachments for older models to reduce the man-power required for spraying. Also, new special equipment such as aerosol generators, mist blowers and liquid dusters, which apply insecticides and fungicides in highly concentrated form, are now undergoing field tests and look promising for certain types of applications.

For small farms or acreages, hand dusters will do an efficient job of insect control. The principal types include crank, knapsack and bellows dusters. The smaller plunger type dusters are useful for garden dusting and for winter dusting of small herds of livestock for insect control.

Sprayers and dusters wisely selected and properly used will pay big returns.



Almost one-fourth of all pedestrian deaths occur during one-sixteenth of the year—between 5 and 8 P. M. in the six months of October through March.

NATIONAL SAFETY COUNCIL

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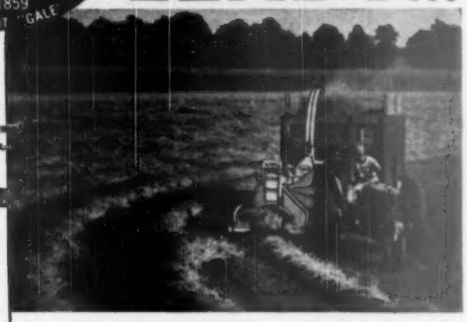

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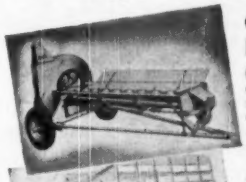

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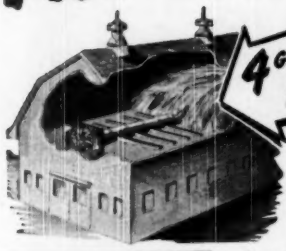

4 GIVEN AWAY FREE!

Get your official entry blank NOW. Four winners each receive free a Louden Hi-Dri Hay Drier — eliminates weather hazards, preserves natural protein and mineral content, reduces fire hazards, can repay its cost in a year. But hurry! Contest ends Feb. 18. Read rules, then complete in not more than 50 additional words, this sentence: "We need a scientifically designed, all-steel prefabricated Louden Hi-Dri Hay Drier on our farm because . . . ".

Mow-curing has been accepted since 1940—now Louden makes the only complete steel unit with balanced air flow — tested at a leading agricultural college. Steel construction assures longer life, lower installation and operating cost, better air flow — ends warping and rotting.

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STALLS AND STANCHIONS

105 BIG PRIZES . . awarded as follows:

For the best entry from each of the four sections shown on map at left, an 1800 sq. ft. capacity Hi-Dri, delivered to winner's depot, with AEROVENT FAN, WESTINGHOUSE LIFE-LINE MOTOR (factory lubricated for life) and controls — Value $1,211.75 ea. ..... $ 4,847.00

To the 101 next best entries, including the best entry from each state, a $250 Hi-Dri Credit Certificate, for use in purchasing an 1800 sq. ft. capacity, or larger, Hi-Dri 25,250.00

Total Value of Prizes $30,097.00

ELECTRIC VENTILATION

WATER BOWLS

COW, CALF, BULL & HOG PENS

HAY TOOLS

See your Louden dealer, or WRITE TODAY for contest blank, Hi-Dri savings and cost analysis, contest hints and suggestions. Get information about all barn equipment bearing the name Louden —first in barn equipment since 1867. If you don't know your dealer's name, write address below.

THE LOUDEN MACHINERY COMPANY
391 S. Court St. *(Est. 1867)* Fairfield, Iowa
BRANCH OFFICE: ALBANY 1, NEW YORK
(But please send all inquiries to Fairfield)

READ THESE SIMPLE RULES

1. An official entry blank must be used, obtainable from your Louden dealer or address below. Complete in 50 additional words or less the following sentence: "We need a scientifically designed, all-steel, prefabricated Louden Hi-Dri Hay Drier on our farm because . . . ." Decorated entries will not be considered.
2. All entries become property of The Louden Machinery Co. None will be returned.
3. Entries will be judged on originality, aptness of thought, neatness, uniqueness of idea, sincerity, logic, etc., and the decisions of the judges will be final.
4. In case of ties, duplicate prizes will be awarded.
5. Contest closes Saturday, Feb. 18. All entries must be postmarked before midnight, Feb. 18, to be considered.
6. Winners will be notified not later than March 1. A complete list of all winners will be mailed to anyone sending a self-addressed stamped envelope after contest closes.
7. The contest is subject to all State and Federal laws.
8. Any person owning or living on a farm in the continental United States may compete, except employees of The Louden Machinery Company, its advertising agency, and their families.

VO-AG TEACHERS: ***Make this a classroom subject—get students fully acquainted with mow-curing and give them an opportunity to win a prize. Mow-curing's the modern way to cure hay. For detailed information, entry blanks (give quantity needed), contest hints, write address above.***

LIVESTOCK PICTURES IN *Natural Colors*

Price 15 cents each, $1 for ten.
Complete set of 18, $1.80.
SEND CHECK OR MONEY ORDER
No C.O.D. Salpmeats

We have color pictures, printed on 8 x 11 inch stock:

1. Brown Swiss Cow
2. Jersey Bull and Cow
3. Guernsey Bull and Cow
4. Holstein Bull and Cow
5. Duroc Gilt
6. Hampshire Sow
7. Berkshire Sow
8. Hampshire Ram
9. Columbia Ram
10. Angus Bull
11. Hereford Bull
12. Polled Hereford Bull
13. Shorthorn Bull
14. Shorthorn Cow
15. Milking Shorthorn Cow
16. Percheron Horse
17. Milking Shorthorn Bull
18. Hereford Cow

Better Farming Methods

Mount Morris, Ill.

Washington News

(Continued from page 12)

USDA foremen, to change the terms of the new farm law. But major changes are unlikely until after the election.

Betting is slightly in favor of passage of legislation ending federal taxes on the manufacture and sale of yellow margarine.

FARMER'S FOOD DOLLAR—Lawmakers out to reduce the spread between farm and retail prices won't get far in the next year, according to the way USDA figures it.

The BAE thinks the farmer's share of the food dollar will drop from the present level of about 49 cents to 46 or 47 cents in 1950.

Profits of middlemen hit the high point in 1946, and are still on the way down, but labor and transportation costs are probably going higher. The latter now total 52 percent of total marketing charges.

A Senate Agricultural subcommittee, headed by Iowa's Guy M. Gillette, is studying marketing margins. A report to the full Senate committee is due about mid-January.

CAMPAIGN FOR 4-H CLUB CENTER—Look for progress soon in the campaign for a national 4-H club center in or near the nation's capital.

Trustees of National 4-H Club Foundation, Inc., are coming to Washington in mid-January to discuss that project, and blueprint plans for their New Year program.

Trustee chairman is Walter S. Brown, extension director, University of Georgia. Albert Hoefer of Cornell University, New York 4-H leader, is vice chairman.

All extension directors serve as advisory board to the foundation, organized a year ago, which is custodian of funds for the prospective 4-H center and the International Farm Youth Exchange program.

EXPANDED MARKET IN 1975—Farmers can look for an expanded market of from nine to 26 percent in the next quarter-century in terms of expected gains in United States population.

There will be 162,337,000 to 188,585,000 people in the United States in 1975, according to a recent survey by BAE. Present population is 149,215,000.

BAE believes that the population of every major area will increase, with greatest gains in Pacific states and the smallest in the West North Central area.

The latter prediction could go wrong, the BAE forecast points out, in case of "industrial development . . . as proposed under a Missouri Valley Authority."

Gains forecast for all areas:

Pacific, 31.7 percent to 66.4 percent; West North Central, from minus .4 to 10.7 percent; New England, 1.6 to 13.8 per-

cent; Middle Atlantic, 5.1 to 19.8 percent; East North Central, Mountain, South Atlantic, and East South Central, 8.8 to 26.4 percent, and West South Central, 6.4 to 22.2 percent.

WICKARD SAYS, "IT ISN'T SO"—REA Boss Claude Wickard is out to dispel charges that the electric cooperatives are out to gain control over the new rural telephone improvement and expansion program.

Under new legislation, Wickard's agency is authorized to make 35-year loans at 2 percent for farm telephone service.

The REA chief, and former agriculture Secretary, recently took steps to allay worries of managers of existing telephone systems. He stressed 3 main points.

(1) In many states, he said, there are "substantial" legal obstacles in way of provision of telephone service by electric co-ops.

(2) The membership of an electric cooperative rarely would be the same as that of a telephone co-op.

(3) Loans to one cooperative for both electrification and telephones would make it difficult to account for expenditure of federal funds.

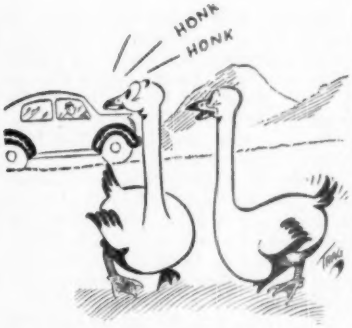
Wickard warned, however, that existing systems must take action to improve and expand service.

MORE TRUCKS IN SOUTH—Agricultural progress in the South may be faster than most of us think, and perhaps more rapid than in any other section of the country.

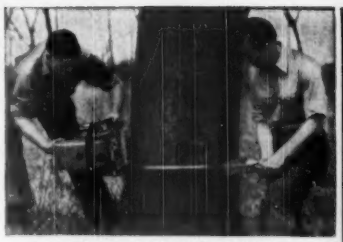
Reporting on a transportation survey recently completed, the BAE observes that "the greatest increase in numbers of farm motor trucks from 1945 to 1948 occurred in the South."

The increase in the South was 55 percent, compared with only 29 percent for the nation as a whole. One reason is that there were fewer trucks on southern farms in 1945, but that probably does not fully explain the sharp difference in the percentages.

★



"Bold, outright theft, that's what it is . . . we should have had it patented!"



Popular new 30" Light Convertible can be used either as a one or two man unit.

DISSTON
CHAIN SAWS
HELP CONVERT FARM WOODLOTS INTO CASH

Disston Chain Saws make it quicker, easier than ever for farmers to cut firewood, pulpwood, fenceposts, mine props, saw mill logs . . . to clear land. Trees can be cut close to the ground—and bucked and limbed where they fall.

There is a correct Disston type for every farm. There is power to spare in the sturdy Mercury engine. These saws have proved their dependability to thousands of farmers—county agents—agricultural schools. Get your own proof; get a demonstration from Your Disston Chain Saw Dealer.

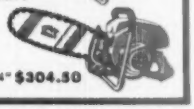
HENRY DISSTON & SONS, INC.
105 Tacony, Philadelphia 35, Pa., U.S.A.
In Canada, write:
2-20 Fraser Ave., Toronto 3, Ont.

NEW LOW PRICES
For DO-100 Units

DISSTON 1 or 2-MAN 30" LIGHT CONVERTIBLE $332.00

HELPER HANDLE for 24" and 30" units $10.50

DISSTON 1-MAN Non-Pinch BOW SAW $323.00



DISSTON 1-MAN SAW 18" $299.50 24" $304.50

For Contract Farmers—Heavy Work—Large Trees
THE EXTRA-DUTY 2-MAN DISSTON CHAIN SAW provides 2' to 7' cutting capacity, easily handled by the husky 12 hp Mercury engine.

Juniors! Plan Your Future Now . . . with JERSEYS

Silken Lady's Ruby at 7, 19 years old and still paying big dividends

Suppose Dad had helped you buy this grand old lady when she was a calf and you were 12 years old. You would now be 31, for she is 19. In those 19 years she would have given you 10,048 pounds of butterfat and 181,977 pounds of milk, plus 18 husky offspring! And, she would still be bringing you profits, for "Ruby" produced 12,082 pounds milk, 646 pounds butterfat, in the first nine months of 1949, and is still milking!

What an investment for any boy or girl! What a sound start her owner J. W. Coppini made when he purchased three purebred Jersey heifers in 1906!

Ruby's record shows what can be done with economical, profit-making Jerseys—the breed that matures early, lives long, and ranks highest for butterfat test.

If you're planning your future (and what Junior isn't?) investigate Jerseys. Send a postcard today for special Junior Jersey literature. Do it now!

THE AMERICAN JERSEY CATTLE CLUB
107 N. Sixth Street • Columbus 15, Ohio

How to Use and Apply Lindane

(Continued)

Insect	*Formulation*	*Rate of Application*	*Remarks*
	1.5% Dust	17 to 33 lbs. per acre.	Soil insects. Apply as a dust directly on the soil then disc as soon as practicable to give thorough distribution in upper 4 to 6 inches of soil.
Cutworms	1% Dust	25 to 50 lbs. per acre.	Soil insects. Apply as a dust directly on the soil then disc as soon as practicable to give thorough distribution in upper 4 to 6 inches of soil.
Diabrotica Beetles	20% Liquid	1 pint per 100 gallons of diluted spray.	Greenhouse nursery plants. Repeat application as necessary.
	25% Powder	1 lb. in 100 gallons of water.	Cole crops. Treat before heads begin to form.
		1 lb. in 100 gallons of water.	Tobacco.
	2% Dust	25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation.
	1.5% Dust	25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation. Do not dust after fruit starts to set.
	1%	25 to 45 lbs. per acre.	Tomatoes. Depending on plant size and insect infestation. Do not dust after fruit starts to set.
Flies	20% Liquid Concentrate	1 part Concentrate in 9 to 16 parts odorless Kerosene	Apply by means of hi-fog gun or other atomizing equipment.
	20% Liquid	1½ gallons in 100 gallons of water.	As a spray. Apply at rate of 1 gallon diluted spray per 500 sq. feet of surface or until surface is thoroughly wet.
		1 quart in 2½ gallons of water.	As a paint. Paint around windows, doors, ceiling beams and other places frequented by flies.
	25% Wettable Powder	10 lbs. in 100 gallons of water.	As a spray. Apply at the rate of 1 gallon diluted spray per 500 sq. ft. of surface or until surface is thoroughly wet.
		1 lb. in 2½ gallons of water.	As a paint. Paint windows, doors and ceiling beams.
Fuller Rose Weevil	20% Liquid	1 pint per 100 gallons of water.	Camellias, azaleas, rhododendrons. Spray to saturate soil around plant beds.
Grasshoppers	25% Powder	1 lb. in 100 gallons of water.	Apples, walnuts, forage crops. Do not apply later than 2 weeks before harvest. Do not apply on apples within 60 days of harvest.
		1 lb. in 100 gallons of water.	Cucurbits. Do not apply after blossoms form. Treat under leaves also.
		1 lb. in 100 gallons of water.	Tobacco.
	2% Dust	25 to 45 lbs. per acre.	Cranberries. Treat not later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Forage crops—Alfalfa & Clover. Apply when first cutting is 2 to 4 inches high and repeat in new growth after each cutting.
	1.5% Dust	25 to 45 lbs. per acre.	Cranberries. Depending on plant size and insect population. Treat not later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Forage crops-Alfalfa & Clover. Apply when first cutting is from 2 to 4 inches high. Do not apply during blossoming period.
Grasshoppers	1% Dust	25 to 45 lbs. per acre.	Cranberries. Treat not later than 2 weeks before harvest.
		25 to 45 lbs. per acre.	Forage crops. Alfalfa & Clover. Apply when first cutting is from 2 to 4 inches high. Do not apply during blossoming period.
Lace Wing Bugs	2%	25 to 45 lbs. per acre.	Egg plant. Treat at least 2 weeks before harvest.
	1.5%	25 to 30 lbs. per acre.	Egg plant. Treat not later than two weeks before harvest.
	1%	25 to 45 lbs. per acre.	Egg plant. Treat at least 2 weeks before harvest.
Leafminers	20% Liquid	1 pint per 100 gallons diluted spray.	Spinach. Apply only in seedling stage.
		1 pint per 100 gallons diluted spray.	Greenhouse nursery plants. Repeat applications as necessary.
	25% Powder	1 lb. per 100 gallons of water.	Cucurbits. Do not apply after blossoms form. Treat under leaves also.
		1 lb. per 100 gallons of water.	Peppers. Do not apply after blossoms fall.
		1 lb. per 100 gallons of water.	Spinach. Use only in seedling stage. Do not apply later than two weeks before harvest.
		1 lb. per 100 gallons of water.	Tomatoes. (Fresh fruit market only.) Do not apply after blossoms form.

Spray Application

(*Continued from page 77*)

mixture calculations, a simple slide rule would be very advantageous.

Spray tanks or barrels should be calibrated in five-gallon increments with a good measuring stick. This stick should not be painted or varnished, as the liquid level will be harder to read.

Boom Swing and Spray Height

It should be fairly obvious that the boom must be held rigidly while spraying so that it has a uniform forward speed. If the boom swings back and forth while spraying, the solution will not be applied evenly. The boom height should also be held fairly constant above the plants so the pattern from the spray nozzles is complete.

Wind and Climatic Conditions

Wind and climatic conditions have a very definite effect on spray results due to drift and evaporation. When spraying under windy conditions, it is advisable to increase the rate of carrier fluid application. This increases the size of the droplets and minimizes the action of wind and evaporation.

Increasing the pressure increases the rate of application, but also increases fogging and drift; therefore, it is necessary to change to larger nozzle tips when materially increasing the rate of spray application.

Tanks and booms should be resistant to alkalies and acids used in spray chemicals and fertilizers. Paint, plating, galvanizing, baked enamel, and certain of the non-ferrous metals will not withstand all of the spray or defoliation chemicals. The boom support structure and attach brackets should be rigidly built to withstand rough usage. Controls should be simple so they may be easily repaired when necessary.

O. W. Kromer is president and chief engineer, O. W. Kromer Co.

★

2,4-D Saved Corn

Spraying with 2,4-D saved Hancock county, Ky., corn when wet weather prevented cultivation and weeds had all but taken over, says County Agent Charles L. Goff. Rain kept farmers out of the cornfields in June and in much of July. Some corn was three to four feet high before it was cultivated.

On the W. S. Dean farm near Lewisport, 2,4-D was used at the rate of a pint to the acre and weeds were completely controlled. Cultivation was then begun, some of the corn being plowed once and some twice. However, the second cultivation brought no increase in yield.

Many farmers in the county told Goff they were highly pleased with the use of 2,4-D to control weeds.

4-H News for CLUB LEADERS

Dedicate Building to Pioneer

The memory of one of Minnesota's pioneers in agricultural extension work was honored at a dedication on the Blue Earth county fairgrounds August 23.

Two 4-H club buildings, one a new structure and the other remodeled, were dedicated to L. E. McMillan, long-time county agent, who died Nov. 17, 1945.

McMillan, county agent in Blue Earth county for nearly 26 years, was an early leader in both adult education in agriculture and in education of rural young people through 4-H club work. He was Minnesota's oldest county agent in point of service at the time of his death.

Key speaker at the dedication was Leonard L. Harkness, state 4-H club leader who succeeded McMillan as Blue Earth county agent in 1945.

★

Camp Counselor Training

At the annual meeting of the New England Camping Association, held at the Hotel Statler in Boston last winter, the New England Club Agents' Association sponsored a sectional meeting on short-time camping problems.

This is the third such meeting which the association has held. It was attended by a representative group of 4-H club agents, directors and counselors of other agency camps. Henry Krebser, chairman, camping committee, presided.

Camp counselor training was discussed. County Club Agent Beth Bourne, Exeter, N. H., served as discussion leader. Methods of training camp leaders were suggested. It was emphasized that they should be selected early, and be given plenty of time for training. One of the ways of increasing interest and cooperative spirit is to let them help plan the program. To accomplish this, one or more counselor training meetings should be held before the summer camping season. A pre-season camp of two or three days was reported very successful by several directors. In one camp, which opens on Tuesday, leaders are invited to camp on Sunday and spend the time between then and the arrival of the campers in studying the program and getting acquainted with the available facilities.

Staff meetings during camp are highly important, in the opinion of those taking part in the discussion. Some camps hold meetings after taps, with partly serious discussions of the day's activities and the events of the coming day, combined with relaxation and fun. Other camps report holding such meetings in the half-hour immediately after breakfast, while the campers are engaged in the morning clean-up and tent care.

The general opinion of the group was that adults should be used for teaching subjects in which they have specialized training. Older club members should be used for cabin or tent leaders, and assistants in the hobby groups.

Panel discussions with both experienced camp counselors and new members of the staff taking part have been found good for assisting the entire staff to develop group thinking. Informal discussion group methods are also good. One camp director assigns case stories to each member, asking each one to discuss the implications of the behavior described. Many of these cases are taken from the files of the camp, while others may be found in books on camping.

All the club agents and camp directors attending the session were convinced that work spent in developing good counselor training methods is work well spent. It will result in better oriented leaders, a smoother program, unified thinking about camp life and problems, and greater interest in the individual camper. — *Bruce R. Buchanan, county club agent, Brattleboro, Vt.*

★

Indian 4-H'ers Make Record

Arizona's first 100 percent Indian 4-H club has completed a livestock project that will make many other 4-H clubs sit up and take notice, reports Sam W. Armstrong, county agricultural agent for Gila county.

Last February 17, the San Carlos 4-H club was organized on the San Carlos Reservation with 22 members.

The club members chose bulls or steers as their 4-H project. At the end of the club year, every one of the boys and girls in the club had completed his or her project—and that means 100 percent completions. Few clubs anywhere can boast of that sort of record. And another record: every member has signed up for another project next year.

These Indian boys and girls had the full support of their Tribal Council. Bulls or steers were selected by the club members from the council herd. Financial arrangements were worked out with the council so the members could take care of their projects.

★

New 4-H Movie

New Idea Div., Avco Mfg. Corp., Coldwater, O., has produced a 16 mm., colored, sound film, "4-H Headlines."

The film is dedicated to 4-H boys and girls, their leaders and parents, whose accomplishments in the past deserve much credit for the agricultural pattern of today.

The film may be secured by writing to the Venard Organization, 702 South Adams St., Peoria, Ill. Please give a choice of dates.

★

Tractor Safety Rules

Three million farm tractors now play a vital role in the production and harvesting of the nation's farm crops.

They have established an enviable performance except where the operator lets an accident mar the record. National Safety Council reports indicate that tractors may be involved in nearly 75 percent of all accidents with farm machinery. All these accidents are needless.

The main safety rule for operating tractors in the field is just good common sense. Farmers can't afford to gamble the loss of a limb or life by operating without the power take-off shield in place. Cranking a tractor while in gear is another dangerous way to start a day's work. Excessive speed and careless operation around ditches will also hurry a trip to the hospital. Jumping off the tractor while it is in motion is another ways to invite an accident.

Here are a few more important rules:

1. Be careful in coupling implements to tractors; always stay in the clear.
2. Avoid wearing loose, floppy clothing while operating tractors.
3. Observe standard traffic signals when operating on public highways.
4. Use light for night operation; don't operate in the dark.
5. See that everyone is in the clear before starting a tractor.

★

Lightweight Tape Recorder

New type magnetic tape recorder and play back unit, made by the Ampro Corporation of Chicago. This new unit weighs only 15 pounds. Its overall size is only 8" x 8" x 11".

FUTURE FARMERS OF AMERICA

Activities

Ga. Chapters Awarded Plaques

Four Georgia vo-ag teachers were honored at the 21st annual state FFA convention when their chapters were selected as district winners in the chapter achievement contest, sponsored by the Chilean Nitrate Educational Bureau. The chapters received plaques and each of the advisers an expense-paid trip to the national FFA convention in Kansas City. Here, T. H. Bonner, educational director for Chilean, presents the awards to (l-r): Mack Patrick, Rabun Gap; A. R. Tuten, Baxley; and Dewey Turner, Waverly Hall. H. R. Madison, Cairo, was not present to receive his award.

★

Fla. FFA Visits Yellowstone

Twenty-seven members of the Fort Myers, Fla., FFA chapter made a two weeks' trip to Yellowstone National Park.

The trip, made by school bus, took them 6,800 miles, through 15 states. Joe Norfleet, vo-ag instructor, and George Thompson were the guides on the trip.

The boys visited the farm lands, which include wheat fields and ranches in the mid-west of cattle and buffalo. They brought back souvenirs of snowball fights in the Rockies.

The boys have been making these trips for several years, saving the money through cooperative projects. Previously they visited Havana and Washington. For this trip, they saved $1,300 and each boy paid an additional $15.

★

Kansas Features Skill Courses

The latest procedures in arc welding featured the short skill course in arc welding, offered by the agricultural engineering department, in connection with the annual refresher and skill courses, offered June 13-15 at Kansas State College, Manhattan. The courses are sponsored annually by the Kansas State Board for Vocational Education and Kansas State College for the vocational agriculture and on-farm training for veterans' instructors in Kansas.

The arc welding course was a popular one with the teachers. With the arc welder becoming more and more essential in the farm shop today, the teachers were interested in learning the latest methods in using the machine and in comparing various models of farm welders now on the market. Welders used in the courses were provided by 12 cooperating agencies.

The popularity of the welder has been brought about through the development of the new type electrodes suitable for welding cast, plus the fact that new farm machinery is made of iron steel.

Motion pictures, lectures, demonstrations and practice were used in conducting the course. Emphasis was placed on selection of material and problems encountered when welding various types of materials.

The training was offered on a one-day basis for the three-day period, with enrollment limited to 20 instructors daily. Classes started at 8:00 a.m. and continued through the day until 5:00 p.m., with the last hour devoted to questions and answers.

Instructors of the course were Harold Kugler, agricultural engineering department, Kansas State College; and John McFeeters, representative of the Lincoln Electric Company.

Twenty-four subjects were offered for the benefit of the 350 instructors during the three-day period. These subjects included problems in livestock, dairy and poultry, soil management, weed control, crop rotation and farm mechanics. The courses were planned and organized by L. F. Hall, Kansas State College. *—Helen Ankeny, Kansas State Board for Vocational Education.*

★

FFA Judging Contest Results

National FFA judging contests were held during the month of October.

Dairy cattle, dairy products and poultry contests were held at Waterloo, Ia., October 4-6. Contests in livestock judging and meats identification took place at the American Royal Grounds in Kansas City, Mo., October 13-15.

In all of the contests, state teams and individual judges were ranked Gold Emblem, Silver Emblem, Bronze Emblem, Honorable Mention, or Participation in that order. Emblem winners, teams and individuals, received plaques, and those placing Honorable Mention or Participation received certificates. In addition, all Gold Emblem winners received cash awards. All awards were provided by the Future Farmers of America Foundation, Inc.

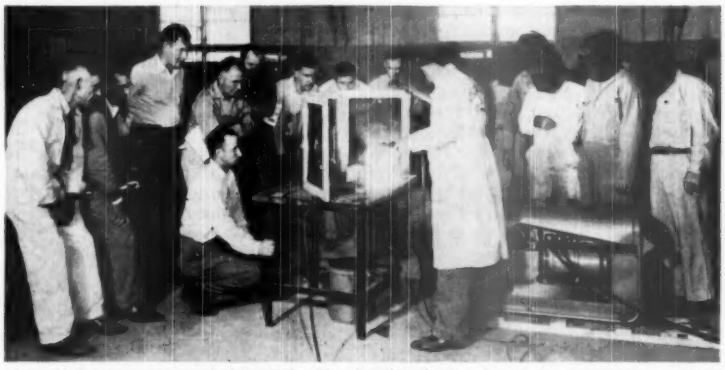
The names of the states winning Gold Emblem awards, and the names of the vo-ag teachers who served as coaches, are listed as follows:

Dairy Cattle

ARIZONA, G. K. Nelson, Mesa; CALIFORNIA, W. L. Norton, Petaluma; ILLINOIS, E. J. Dunphy, Sullivan; KANSAS, Carl Beyer, Belleville; MICHIGAN, Raymond Hill, Hillsdale; MINNESOTA, J. H. Tschetter, Mountain Lake; MISSISSIPPI, J. N. Hurt, Macon; NORTH DAKOTA, Emil Vallager, Langdon; OKLAHOMA, Olen Joyner, Mountain View.

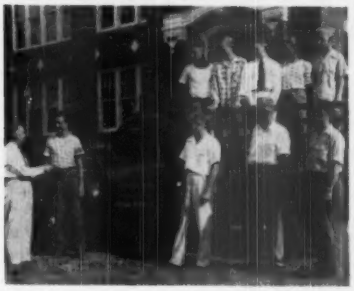
Dairy Products

MISSISSIPPI, B. M. Trapp, Binford;



John McFeeters, representative of the Lincoln Electric Co., demonstrating position welding for vo-ag instructors enrolled in skill course, Kansas State College, Manhattan, June 13-15.

Chapter Receives New Truck



President Randolph Gant, second from left, accepts the keys to a new Studebaker half-ton truck which the Richmond, Mo. chapter of the Future Farmers of America will use during the school year, through the courtesy of James A. Weltmer, left, president and treasurer of the Weltmer Motor Co., Inc., in Richmond. Watching from the truck are five Future Farmers, while below them are (l-r): William Hope, FFA adviser; Woodford Denton, high school principal; and Cordell Thomas, superintendent, Richmond School System.

UTAH, Rex Jensen, Richfield; WISCONSIN, F. J. Haugh, Menominee.

Poultry Production

KANSAS, C. H. Young, Cherryvale; LOUISIANA, Claude J. Naquin, Larose; MISSOURI, Oliver Barnard, Osceola; OHIO, Howard Nowels, Logan City; TEXAS, R. J. Powell, Richland Springs.

Livestock

ALABAMA, J. D. Wigley, Huntsville; ILLINOIS, Keith E. Wehner, Rochelle; INDIANA, Nelson M. Cook, Bourbon; KENTUCKY, John Langford, Shopville; NEBRASKA, Ruben K. Epp, Shelton; NORTH DAKOTA, Douglas Fisk, Jamestown; OKLAHOMA, Victor Stroup, Garber; TEXAS, Emmitt H. Cavin, Odessa.

Meats Indentification

MISSOURI, Carl R. Armentrout, Independence; OHIO, S. J. McGuire, Marysville; OKLAHOMA, Ralph Dreessen, Guthrie; TEXAS, R. J. Powell, Richland Springs; UTAH, Harold Lindsay, Fillmore.

★

Capacity of Circular Metal Corn Cribs

Capacity Shell Corn Bushels	*Capacity Ear Corn Bushels*	*Diameter*	*Height*
200	115	6'-4"	8'
325	187	8'-0"	8'
455	266	9'-6"	8'
570	327	9'-6"	10'
635	390	11'-2"	8'
785	475	11'-2"	10'
905	530	12'-0"	10'
1100	600	12'-9"	10'

Ear corn 4,000 cu. in. per bushel of 70 pounds. Shell corn at 2,150 cu. in. per bushel.

MILK *in feeds*

ADDS TO PROFITS!

Really good feeds contain milk . . . and experience proves that they show their profitable results in efficient growth, convenience and economy. It pays to use dry skim or buttermilk for breeding mashes and starting feeds for all young farm animals and poultry. *There's no substitute for milk results.*

In formulating home- or custom-mixed feeds, point out these significant facts:

√ All the nutrients of the original milk products are contained in dry skim milk and dry buttermilk for poultry and animal feeding.

√ Fast, vigorous growth is promoted by livestock farmers and poultry raisers who use dry milks in vital feed formulas.

√ They are concentrated—dry milks are packed with proteins, vitamins, minerals and milk sugar—They contain no waste matter.

The Feed Service Division of the Institute offers a practical, helpful bulletin on the profitable use of Dry Skim Milk and Dry Buttermilk in Home-Mixed Feeds.

AMERICAN DRY MILK INSTITUTE, Inc., 221 N. La Salle St., Chicago

IN NEW HAMPSHIRES, IT'S
NICHOLS of KINGSTON, N. H.
BRED TO THE CORE FOR BROILER PROFITS

High, practical quality your grower and hatching egg producer friends will find economical to produce. Outstanding performance in 10 breeding factors assured through pedigreeing, individual selection and use of best families. N.H., U.S. Approved, Pullorum Clean. Say "NICHOLS" when asked about broiler and reproduction chicks. Free catalog in full colors—write

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MAKE MORE PROFITS UNDER AVERAGE FARM CONDITIONS
—RAISE MILKING SHORTHORNS

For the average farmer, Milking Shorthorns are unbeatable. Produce 4% milk. Have greater carcass value than other breeds. Second to none in producing milk and meat from homegrown roughage and grain from your farm! FREE facts. Or subscribe to Milking Shorthorn Journal. Six months, $1.00; $2.00 per year; 3 years, $5.00.

AMERICAN MILKING SHORTHORN SOCIETY
Dept. BF-5, 4122 South Union, Chicago 9, Illinois

AG CHEMICALS SECTION See Page 26

News from the Field

ML Speaks at New Idea

Principal speakers in ceremonies at Coldwater, O., commemorating the golden anniversary of New Idea, were M. L. Wilson (left), director of extension service, USDA; and H. E. Babcock, noted farm leader and director of Avco Mfg. Corp. Wilson, who heads the nation's county farm agents, declared that America stands on the threshold of a new era in agriculture, as revolutionary as the one brought about by the change from horse-drawn to tractor-drawn equipment.

★

Brown Swiss Annual Report

The annual report for the year ending September 30, 1949, just released by the Brown Swiss Breeders' Association, shows that 21,315 registrations were made during the past year, which is a decrease of 5.7 percent over a year ago.

The highlight of the past year was to have two cows complete records in excess of Illini Nellie's record, which had stood unchallenged for 12 years. Royal's Rapture of Lee's Hill, starting test at five years and 11 months in 365 days on 3x, produced 29,095.7 lbs. of 4.22 percent milk, 1,228.84 lbs. B. F. Clepe's Best M.B., starting test at seven years, six months of age in 365 days on 3x, produced 25,436.5 lbs. of 4.75 percent milk, 1,207.52 lbs. B. F. Both cows are leaders in their class; both cows have been tested each lactation since they first freshened as two-year-olds.

★

New Hyman Insecticides

Two new insecticides have been developed by the laboratories of Julius Hyman & Company, and widely tested during the past year. The toxicants are known as Compound 118 (Octalene) and Compound 497 (Octalox). It is anticipated that both of these products will be formulated and offered for sale in 1950 through normal commercial channels.

Octalene has demonstrated striking performance in the control of the following general group of pests: (1) Against soil insects such as wireworms, seed beetles, root maggots, root worms, ants, root aphids and many species of grubs. (2) For control of Lygus, grasshoppers and crickets, two to four ounces of this compound per acre, applied as a spray, yields highly effective results. (3) Excellent control of cotton boll weevil and certain other cotton pests has been obtained on mature cotton by the application of four ounces of Octalene per acre, whether applied as a dust or spray. Octalene is of little value against cotton bollworm. (4) Octalene has shown remarkable effectiveness against the plum curculio. (5) The alfalfa weevil and several other legume pests have yielded readily to Octalene. (6) Ants of many varieties have been shown to be extremely susceptible to Octalene.

Octalox has been found effective for controlling the following insects: flies, mosquitoes, armyworms, southern armyworms, cut worms, cotton bollworm, cotton boll weevil, deep nesting harvester ants, fruit flies, citrus thrips and the Nitidulid beetle, attacking dates and figs.

★

I-H Introduces New Trucks

New International Harvester L-Line was introduced throughout the country November 30, by the motor truck division of International Harvester Company. The models shown here of the L-110, L-160 and L-190 series, are representative of International Harvester's 87 new L-Line separate International truck chassis models. The Standard classification model, L-112 at left, has a gross vehicle weight of 4,800 pounds; the Standard model L-162, center, has a GVW of 16,000 pounds, and the Roadliner (tractor) classification model L-195 has a GCW of 48,000 pounds.

★

Livestock Short Course

A four-week short course in livestock farming will be offered at the Pennsylvania State College in February, 1950. The course is open to all interested persons and will include both classroom and laboratory instruction in the judging, feeding, breeding and management of beef cattle, sheep, swine and work horses, and in disease prevention.

An intensive course in general farming will be offered during January. Subjects in this course will include beekeeping, poultry management, farm machinery, soils and fertilizers, and farm crops.

If you would like to have an illustrated pamphlet, send your request to A. Leland Beam, director of short courses, State College, Pa.

★

Sponsor Television Shows

A six-week's series of farm television shows, called "Summertime on the Farm," was recently completed at WFIL-TV, Philadelphia. These were the first television shows produced by the agricultural extension service of the Pennsylvania State College.

Charles K. Hallowell, Philadelphia county agent, was in charge of the series and most of the shows were produced by Elton B. Tait, extension radio editor. In all the shows, motion picture film produced by George F. Johnson, extension visual aids specialist, was used.

The purpose of the series, from the extension viewpoint, was to explore the possibilities of farm television.

★

New DHIA Sire List

The 1949 DHIA-Sire-List is now available from the USDA Bureau of Dairy Industry. The 1949 list, which is the 13th list issued since the nation-wide sire-proving program was begun in 1935, and also the largest to date, includes data on 4,887 sires whose records were compiled by the Division of Dairy-Herd-Improvement Investigations during 1948.

County agents, dairy specialists, and DHIA members who receive the monthly DHIA Letter will automatically receive a copy of the 1949 list. Other interested dairymen may obtain a copy on request. Address requests to the Bureau of Dairy Industry, U.S. Department of Agriculture, Washington 25, D.C.

★

Cover for Soil Fumigation

Sisalkraft cover being used to sterilize the beds prior to planting. A fumigant is introduced under the cover area. Sisalkraft is being used by tobacco and vegetable growers.

FACING the FUTURE ... UNAFRAID

OUR ATOMIC AGE gives some folks nightmares that linger long after dawn. Many look to the future with doubt, despondency, and despair.

Farmers read the fear-filled headlines, too—after they have looked at the weather report. They have a big stake in our tomorrow, but they never forget today's job—setting a good table for both rural and urban Americans.

Modern John Deere Power Equipment makes it easier for farmers to raise bumper crops and produce the mountains of meat needed to provide an adequate, well-balanced diet for our people. This abundance of food not only helps to safeguard the nation's health, but nurtures happiness and contentment.

Because of their faith in the land, in themselves, and in divine providence, farmers—who seem to take for granted that each new year will be better than the last—set a shining example for us all. They face the future hopefully—unafraid!

JOHN DEERE

MOLINE • ILLINOIS

SEAMAN Rotary Tillage *completely explained!*

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"Benefits of Rotary Tillage"

Probably the most complete report on rotary tillage ever published. Thirty-two pages of facts, pictures and diagrams. Covers 18 years' coast-to-coast experience in the rotary tillage field.

Describes methods for different crops, various types of soil.

Shows why New Motorized Seaman Tiller equipped with gear-shift transmission to control rotor speeds can work rocky fields or hard soils without damage, and produces medium, fine or coarse tillage as best suited for each soil and crop.

Immensely valuable information about up-to-date farming methods. Send for "Benefits of Rotary Tillage" today.

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FEED MIXER

Yes, in just 10 minutes it mixes and thoroughly blends grains and supplements in batches of 700 to 3,600 lbs., at lowest operating cost. Your monthly saving on feed for cattle, hogs, and poultry, should soon pay its cost.

Rigid all steel construction. Lasts for years. Over 7,000 in use in U. S. and foreign countries. Three sizes — 700 lbs., 1 and 1½ tons. Write for catalog and low prices.

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BROWER MFG. CO.
Box 4052 Quincy, Ill.

Book: "A. B. C. of Poultry Raising"

By J. H. Florea of Poultry Tribune. A complete guide for beginner or expert. By means of many photographs, diagrams, and non-technical instructions, it explains every detail from building your first coop to dressing the fowl for food. 206 pages, cloth binding, well illustrated. **Price $2.50**

Better Farming Methods Mount Morris, Ill.

The following commercially-sponsored films are available to vo-ag teachers, county agents and other agricultural leaders. Most of these films are entirely free; a few require return transportation charges. Inquiries and correspondence should be sent direct to the names and addresses shown. Order films at least 10 days to two weeks before you need them.—Editor.

Legend: Motion (1); Slide (2); Strip (3); Sound (S) Color (C).

S. L. ALLEN & CO., INC., Fifth & Glenwood Ave., Philadelphia, Pa.
"A Chip off the Old Block" 20 min. (V1-16)
"Grow What You Eat" 20 min. (V2-C-16)
"Power Equipment for General Purpose Tractors" 20 min. (V2-C-16)
"Mechanized Power Aids Manpower" 20 min. (V2-16)
"A Garden Tractor at Work" 20 min. (V2-C-16)

ALLIED MILLS, INC., Wayne Agric. Youth Dept., Fort Wayne 1, Ind.
"Waste Weasels" 27 min. (V3-S)
"Building Profit Pullets" 28 min. (V3-S)
"Making Cows Pay" 24 min. (V3-S)
"Full Egg Baskets" 27 min. (V3-S)
"It's in the Bag" 30 min. (V3-S)
"Calf Craft" 30 min. (V3-S)
"Making Bacon" 28 min. (V3-S)

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis.
"Planning to Prosper" 22 min. (V1-SC-16)
"Tomorrow's Leaders" 15 min. (V1-SC-16)
"Sugar in the Everglades" 22 min. (V1-SC-16)
"Hay" 22 min. (V1-SC-16)
"Highway to Alaska" 22 min. (V1-SC-16)
"Pan American Highway" 45 min. (V1-SC-16)
"Looking Ahead" 22 min. (V1-SC-16)
"The Winners" 22 min. (V1-SC-16)

ALUMINUM CO. OF AMERICA, Motion Picture Dept., Pittsburgh 19, Pa.
"The Farmer Takes a Roof" 15 min. (V1-S-16)
"Unfinished Rainbows" 37 min. (V1-SC-16)
"How to Weld Aluminum—Torch Welding" 17 min. (V1-S-16)
"How to Weld Aluminum—Arc Welding" 10 min. (V1-S-16)

AMERICAN CYANAMID CO., Agric. Chemicals Div., Adv. Dept., 30 Rockefeller Plaza, New York 20, N.Y.
"Tobacco Bed Weed Control the Cyanamid Way" 18 min. (V1-SC-16)

AMERICAN GUERNSEY CATTLE CLUB, Peterborough, N.H.
"Man Made Miracles" 30 min. (V1-SC-16)
"Judging Dairy Cattle" (V3-C)

AMERICAN PLANT FOOD COUNCIL, 910 17th St., N.W., Washington 6, D.C.
"First in the Hearts of Farmers" 24 min. (V1-S-16)

ANCHOR SERUM CO., South St. Joseph, Mo.
"Story of Vaccination Simplified" 36 min. (V1-SC-16)

ARMOUR & CO., Chicago, Ill., distributed by Association Films, 35 W. 45th St., New York 19, N.Y.; 206 S. Michigan Ave., Chicago 3, Ill.; 351 Turk St., San Francisco 2, Calif.; and 3012 Maple Ave., Dallas 4, Tex.
"Meat for America" (V1-S-16)

ASSOCIATION FILMS, 35 W. 45th St., New York 19, N.Y.; 206 S. Michigan Ave., Chicago 3, Ill.; 351 Turk St., San Francisco 2, Calif.; and 3012 Maple Ave., Dallas 4, Tex.
"The King Who Came to Breakfast" 17 min. (V1-SC-16)
"Producing Quality Milk" 27 min. (V1-S-16)
"Shortest Way Home" (Travel Movie) 33 min. (V1-S-16)

BABSON BROS. CO., 2843 W. 19th St., Chicago 23, Ill.
"Sentinels of Milk" 20 min. (V1-S-16)

JOHN BEAN MFG. CO., Lansing, Mich.
"Better Livestock" (V1-SC-16)

J. I. CASE CO., Racine, Wis.
"Pageant of Progress" 20 min. (V1-SC-16)
"5000 Years in 50 Scenes" 20 min. (V3-S)
"Level Farming on Sloping Fields" 10 min. (V1-SC-16)
"Making Hay the Case Way" 10 min. (V1-SC-16)
"Soil and Life" (terracing) 10 min. (V1-SC-16)
"Broadbase Terracing with the One-Way Plow" 10 min. (V1-SC-16)
"Your Own Moldboard Plan Will Build a Good Broadbase Terrace" 10 min. (V1-SC-16)
"That the Millions May Eat" (historical) 10 min. (V1-SC-16)
"Food and Freedom" (chronological presentation of farm power and threshing equipment) 10 min. (V1-SC-16)
"Building a Pond" 10 min. (V1-SC-16)
"High Yielding Harvesting" 10 min. (V1-SC-16)
"Strips and Curves" (dryland farming) 20 min. (V1-SC-16)
"More Food from Fewer Acres" (irrigation and intensive farming) 20 min. (V1-SC-16)
"More From Your Mower" 15 min. (V3-S)
"Where Furrows Begin" 30 min. (V3-S)
"Starting New Tractors Right" 15 min. (V3-speaker's manual available)
"Starting New Combines Right" 30 min. (V3-S)
"Operating Your Combine" 15 min. (V3-S)
"Field Chopping" 15 min. (V3-S)
"The Almost Careful Hired Man" 12 min. (V3-SC)

COPPER & BRASS RESEARCH ASS'N., 420 Lexington Ave., New York 17, N. Y.
"Better Water Systems With Copper Tube" 14-min. (V3-S)

DEERE & CO., Moline, Ill., distributed by Reid H. Ray Film Industries, Inc., St. Paul 1, Minn.
"Dr. Jim" 50 min. (V1-S-16)
"The Windjammer" 52 min. (V1-S-16)
"The Blacksmith's Gift" 31 min. (V1-S-16)
"Melody Comes to Town" 50 min. (V1-S-16)
"Joel Gentry in Hollywood" 39 min. (V1-S-16)
"The Tuttle Tugger" 35 min. (V1-S-16)
"The Clean Cut" 11 min. (V1-S-16)
"More Grain in the Grain Tank" 13 min. (V1-S-16)
"Hitching & Belting Pointers" 11 min. (V1-S-16)
"Better Performance, Longer Life in Corn Planters" 13 min. (V1-S-16)
"Menace of the Corn Belt" 11 min. (V1-S-16)
"Keep Your Eye on the Soil" 15 min. (V1-S-16)
"Farm Care of Your Tractor" 36 min. (V1-S-16)
"Soil Conservation with Regular Farm Equipment" 20 min. (V1-SC-16)
"Early Does It" 22 min. (V1-S-16)
"Greener Pastures" 15 min. (V1-SC-16)

DEKALB AGRICULTURAL ASSOC., INC., Educational Div., Dept. 1-B, DeKalb, Ill.

"Acres of Gold" 16 min. (V1-SC-16)
"Under Summer Skies" 16 min. (V1-SC-16)
"Hunger Signs in Corn" 8 min. (V3-S)
"Corn Colors and Color Mixtures" 8 min. (V3-S)
"Sexual Reproduction in Plants" 15 min. (V3-S)
A recording can be furnished where a sound slidefilm projector is available or, if not, a printed syllabus can be provided.

DOBECKMUN CO., P.O. Box 6417, Cleveland 1, O.
"A New Method of Tobacco Plant Culture" 27 min. (V1-C-16)

DOUGLAS FIR PLYWOOD ASSOC., 1232 Shoreham Bldg., Washington 5, D.C.; 1707 Daily News Bldg., Chicago 6, Ill.; Room 301, Tacoma Bldg., Tacoma 2, Wash.
"How to Finish Plywood" 22 min. (V1-SC-16)
"The Plywood Fleet" 35 min. (V1-SC-16)
"Prefabrication with Plywood" 32 min. (V1-SC-16)
"Miracle in Wood" 35 min. (V1-SC-16)
"Farm Uses for Plywood" 30 min. (V1-SC-16)

DOW CHEMICAL CO., Advertising Dept., Midland, Mich.
"Death to Weeds" 20 min. (V1-SC-16)
"Chemical Weed Control" 25 min. (V1-SC-16)

E. I. DUPONT DE NEMOURS & CO., INC., Agric. Promotion Div., 2539 Nemours Bldg., Wilmington 98, Del.
"Lost Harvest" 20 min. (V1-SC-16)

ETHYL CORP., Chrysler Bldg., New York 17, N.Y.
"At Your Command" 22 min. (V1-S-16)
"Masters of the Soil" 23 min. (V1-S-16)
"This is Our Land" 26 min. (V1-S-16)
"Magic in Agriculture" 28 min. (V1-S-16)
"Preventive Maintenance Pays" 21 min. (V1-S-35)
"Old MacDonald Had a Farm" 28 min. (V1-S-16)
"Pattern for Progress" 20 min. (V1-SC-16)

FUNK BROS. SEED CO., Bloomington, Ill.
"The Great Story of Corn" 30 min. (V1-SC-16)

FOX RIVER TRACTOR CO., Appleton, Wis.
"The Forage Master" 33 min. (V1-SC-16)

GENERAL ELECTRIC CO., Farm Industry Div., Schenectady 5, N.Y.
"Bill Howard, RFD" 1 hour (V1-S-16)
"Farm Life" 30 min. (V1-SC-16)
"Frozen Foods" 40 min. (V1-SC-16)
"The Inside of Arc Welding" (V1-SC-16)
Part I, Fundamentals (10 min.)
Part II, Alternating-Current Welding (10 min.)
"Principles of Electricity" 20 min. (V1-SC-16)

GENERAL MOTORS CORP., Public Relations Dept., Detroit 2, Mich., or from college visual libraries.
"Safety, Our Number One Crop" (V1-S-16)

B. F. GOODRICH CO., distributed by Castle Films, Div. of United World Films, Inc., 445 Park Ave., New York, N.Y.
"Rubber Lends a Hand" 28 min. (V1-SC-16)

HY-LINE POULTRY FARMS, 115 11th St., Des Moines 9, Ia.
"Improving Chickens by Crossing Inbred Lines"

INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago, Ill.
"Fresh From the Garden" 7 min. (V1-SC-16)
"Jungle Yachts in the Belgian Congo" 16 min. (V1-S-16)
"Helpful Henry" 21 min. (V1-S-16)
"Farm Inconveniences" 10 min. (V1-S-16)
"My Model Farm" 11 min. (V1-S-16)
"Yesterday and Today" 10 min. (V1-S-16)
"The Story of Binder Twine" 12 min (V1-S-16)
"Save Those Tools" 10 min. (V1-S-16)
"One Man Harvesting" 21 min. (V1-SC-16)
"Permanent Agriculture" 30 min. (V1-S-16)
"Under Western Skies" 28 min. (V1-SC-16)
"Party Line" 16 min. (V1-S-16)
"Romance of the Reaper" 30 min. (V1-S-16)
"Modern Education in the Beaverton Consolidated Schools" 13 min. (V1-S-16)
"Soybeans for Farm and Industry" 10 min. (V1-S-16)

New Film Catalog

Association Films, Inc. announces the release of the 35th edition of its catalog of selected motion pictures. More than 1,300 titles of educational, religious and entertainment films are listed and described in the catalog. Also included are 100 high grade, free films which represent the largest and most varied list of such material available from any one source.

Requests may be sent to Association Films, Inc., 35 W. 45th St., New York, N. Y., or its three other branch offices: Chicago (206 S. Michigan Ave.); Dallas (3012 Maple Ave.); and San Francisco (351 Turk St.).

"It's More Than Hay" 23 min. (V1-SC-16)
"Salute to Agriculture" 13 min. (V1-SC-16)
"County Fair" 22 min. (V1-SC-16)

KEYSTONE STEEL & WIRE CO., distributed by C. L. Venard, 702 S. Adams St., Peoria, Ill.
"Tom—Dick and Harry" 50 min. (V1-S-16)
"Hidden Treasures" 60 min. (V1-S-16)
"A Trip to a Modern Steel and Wire Mill" 24 min. (V1-S-16)
"Hoosier Hot Shots" 13 min. (V1-S-16)
"Box 12—Route 2" 15 min. (V1-S-16)

LEDERLE LABORATORIES Div., Film Library, American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N.Y.
"Newcastle Disease" 15 min. (V1-C-16)
"Modern Control of Poultry Diseases" 35 min. (V1-SC-16)
"Sulmet Sulfamethazine in the Treatment of Livestock Diseases' 25 min. (V1-SC-16)

LINCOLN ELECTRIC CO., 12818 Coit Rd., Cleveland 1, O.
"Welding Comes to the Farm" 24 min. (V1-S-16)

THE JAMES F. LINCOLN ARC WELDING FOUNDATION, Cleveland, O.
"Equipment and Fundamentals of Welding," (V-3) 38 frames.
"Learning to Run a Blade" (V-3) 42 frames.
"How to Make Welds in All Positions" (V-3) 79 frames.
The above slide films may be secured on a loan basis or may be purchased at $3 per set. Postage prepaid in U.S.A. $3.50 elsewhere.

MARQUETTE MFG. CO., INC., Dept. J-23, Minneapolis 14, Minn.
"Marquette Story" 33 min. (V1-SC-16)

MASSEY-HARRIS CO., Racine, Wis.
"A Romance of Two Hemispheres" 55 min. (V1-SC-16)

"Don't worry if you slip, daddy—I've taken first aid work in 4-H!"

"Into Tomorrow" 27 min. (V1-SC-16)
"Two Tickets to Progress" 24 min. (V1-SC-16)

MINNEAPOLIS-MOLINE POWER IMPLEMENT CO., Minneapolis, Minn., distributed by Elliott Film Co., 1110 Nicollet Ave., Minneapolis, Minn.
"Guernsey at War" 34 min. (V1-SC-16)
"Thunderheads Over the Pacific" 45 min. (V1-SC-16)
"A Saga of the Sail" 45 min. (V1-SC-16)
"This Heritage of Ours" 45 min. (V1-SC-16)
"Pioneers of Progress" 45 min. (V1-SC-16)
"Reasons for the Seasons" 45 min. (V1-SC-16)

NEW-IDEA DIV., Avco Mfg. Co., Coldwater, O.
"The Legacy" 27 min. (V1-SC-16)

PENNSYLVANIA SALT MFG. CO., 1000 Widener Bldg., Philadelphia 7, Pa.
"The Problem of Bacteria in Milk" (V1-SC-16)

PHILLIPS PETROLEUM CO., Bartlesville, Okla.
"The Other Side of the Fence" 24 min. (V1-SC-16)

SEARS ROEBUCK FOUNDATION, distributed by C. L. Venard, 702 S. Adams St., Peoria, Ill.
"Southern Sunrise" 20 min. (V1-SC-16)
"National Farm Oddities" 20 min. (V1-S-16)
"National Farm Newsreel" 17 min. (V1-S-16)
"Time's A-Wastin'" 27 min. (V1-S-16)
"Stitch in Time" 26 min. (V1-S-16)
"Under the 4-H Flag" 44 min. (V1-S-16)
"The Green Hand" 44 min. (V1-S-16)
"An Ounce of Prevention" 25 min. (V1-SC-16)
"Where the Road Turns Right" 38 min. (V1-S-16)
"The Golden Egg" 23 min. (V1-S-16)

SHERWIN-WILLIAMS—send requests to your local branch
"Goodbye Weeds"—"Doomsday for Pests" 32 min. (V1-SC-16)
"Agriculture's New Conquest" 22 min. (V1-SC-16)

SINCLAIR REFINING CO., 10 W. 51st St., New York 20, N.Y.; 2540 W. Cermak Rd., Chicago 8, Ill.; P.O. Box 1710, Atlanta, Ga.; 9th and Grand Ave., Kansas City 13, Mo.; and Fair Bldg., Ft. Worth, Tex.
"Over the Rainbow" 35 min. (V1-S-16)
"Farm Work Simplification" 20 min. (V1-S-16)
"Heaven with a Fence Around It" 25 min. (V1-S-16)
"Miracle in Paradise Valley" 35 min. (V1-S-16)

SISALKRAFT CORP., 205 W. Wacker Drive, Chicago 6, Ill.
"Money in the Bank" 15 min. (V1-S-16)

SUNBEAM CORP., Hardware-Machinery Div., 5600 Roosevelt Rd., Chicago 50, Ill.
"Sheep Shearing" (V1-S-16)
"Harvesting the Farm Flock Wool Crop" (V1-16)

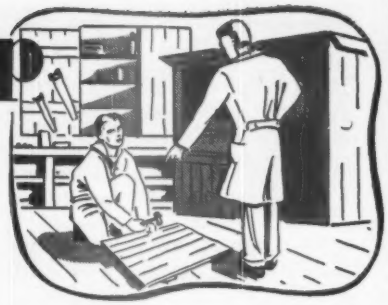
SWIFT & CO., Agricultural Research Dept., Chicago 9, Ill.
"By-Products" 10 min. (V1-SC-16)
"Livestock and Meat" 49 min. (V1-SC-16)
"A Nation's Meat" 30 min. (V1-SC-16)
"Meat Buying Customs" 10 min. (V1-SC-16)
"Cows and Chickens—USA" 25 min. (V1-SC-16)

TEXAS CO., Public Relations Dept., 135 E. 42nd St., New York 17, N.Y.
"Chicken of Tomorrow" 20 min. (V1-SC-16)
"It's News Because It's New" 24 min. (V1-SC-16)
"Your Apple Orchard" 24 min. (V1-SC-16)
"Deep Horizons" 45 min. (V1-SC-16)
"Masters of Molecules" 25 min. (V1-SC-16)
"Tanker" 25 min. (V1-SC-16)
"A New Frontier" 25 min. (V1-SC-16)

WESTINGHOUSE ELECTRIC CORP., School Service, 306 Fourth Ave., Pittsburgh 30, Pa.
"What Is Electricity?" 20 min. (V1-S-16)
"Electronics at Work" 20 min. (V1-S-16)

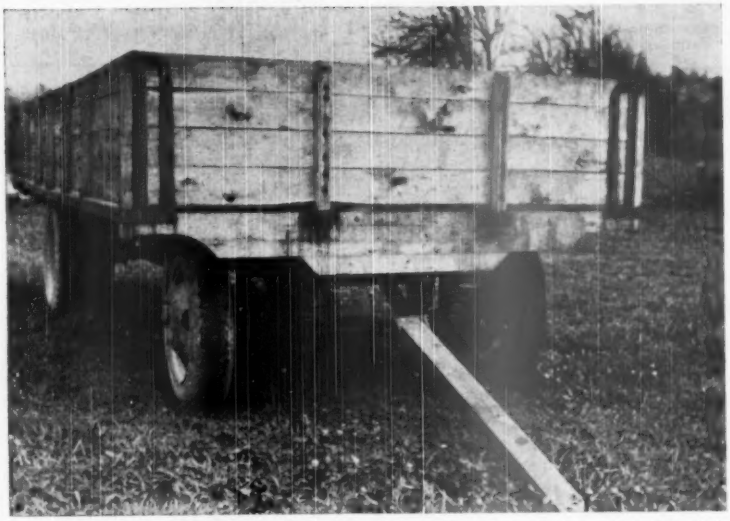
WEYERHAEUSER SALES CO., First National Bank Bldg., St. Paul, Minn.
"Green Harvest" 29 min. (V1-SC-16)
"Trees and Homes" 28 min. (V1-SC-16)

Teacher's Farm Shop



How to Build A Farm Wagon

By T. J. WAKEMAN
Teacher Trainer in Farm Mechanics
Agricultural Engineering Department
Virginia Polytechnic Institute



The completed farm wagon, developed from plans produced by the Virginia Polytechnic Institute, Agricultural Engineering Department, Blacksburg, Va.

● EVER SINCE pneumatic tires have been used on tractors there has been a growing need for a heavy duty tractor wagon that could be constructed economically in the high school farm shop or in the average rural repair shop.

After studying all available plans of shop-constructed farm wagons, V. L. McCoy, E. G. Thompson and T. J. Wakeman, Virginia Polytechnic Institute agricultural engineering department, constructed this wagon which was used almost daily for heavy loads under the most difficult conditions. After two minor changes were made, the plans illustrating this article were drawn.

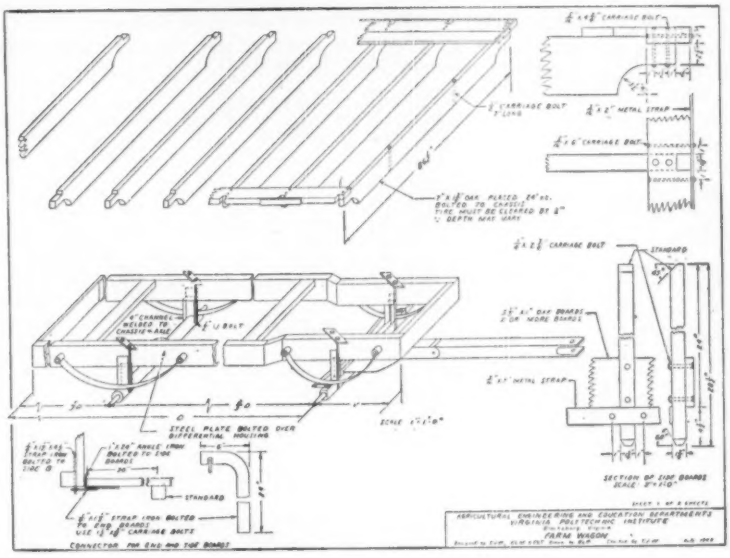
This wagon was constructed from a 1936 Chevrolet 1½-ton school bus truck chassis. It is recommended that a truck chassis with a floating axle be used. It is further recommended that the wagons be constructed with brakes and that the length of the wagon be determined by the user; 12 feet for hilly country or when drawn by a small tractor. When used with larger tractors or on level ground, wagons up to 24 feet are desirable, depending upon the needs of the farm. If wagon is used at night, lights must be installed according to state regulations.

In making plans to construct a farm wagon, an old lumber truck, school bus or farm truck chassis should be secured from the cheapest source available. It is relatively easy to construct a durable farm wagon on a truck chassis at a reasonable cost to the farmer. In securing the chassis, if a late model with floating axle can be purchased, the floating axle and differential can be removed, thus eliminating the problem of keeping oil in the differential.

Construct Steering Arrangement

1. Clean chassis of all extra bolts, metal, grease and oil.

2. Move rear wheels forward a distance equal to the length of the rear



springs by removing the back hangers of the rear springs and placing them in front of the front hangers. This will allow the rear wheels to carry approximately two-thirds of the load.

3. Cut off or extend rear of frame, whichever is necessary to make frame 16' long and to allow rear wheel to carry approximately two-thirds of the load.

4. Block rear springs by placing channel iron between frame and axle. Use ½" round iron "U" bolts to hold frame down so bed will be 2" above wheels.

5. Block front springs by placing channel iron between frame and axle. Use ½" round iron "U" bolts to hold frame down so bed will be 2" above wheels.

6. Remove front axle from chassis by disconnecting springs from hangers.

7. Cut plate to desired size (part no. 5), drill ⅞" hole and weld to top of front axle.

8. Cut plate to desired size (part no. 1), drill ⅞" hole and weld to bottom of front axle. Note: ⅞" hole must be lined up with ⅞" hole in part no. 5.

9. Cut channel iron (parts no. 6 & 7) to correct size—weld spacer (part no. 12) between parts 6 & 7.

10. Weld reinforcements (parts no. 4 & 8) to parts no. 6 & 7.

11. Weld and bolt plates (no. 13) to front end of parts no. 6 & 7.

12. Weld braces (part no. 18) to part no. 13.

13. Construct tongue (part no. 16) by welding two pieces of 4" channel iron together.

14. Weld reinforcements (parts no. 14) inside of channel iron at rear end of tongue.

15. Construct reinforcement for hitch (part no. 17).

16. Cut out place in end of tongue and weld part no. 17 in place.

17. Drill all holes and assemble above parts and bolt to fifth wheel. (Distance between hole no. 9 and 3 must equal distance from A to B on drawing).

18. Cut tie rod and weld braces (parts no. 10 & 11) to tie rod (Must cut approximately 5" out of center of tie rod to allow tongue to cut without ends of braces hitting end of tie rod.) Drill holes and connect to part no. 7 at hole no. 9 with ⅝" bolt. Hole must be at center of original tie rod.

19. Replace front axle under frame by connecting springs to hangers.

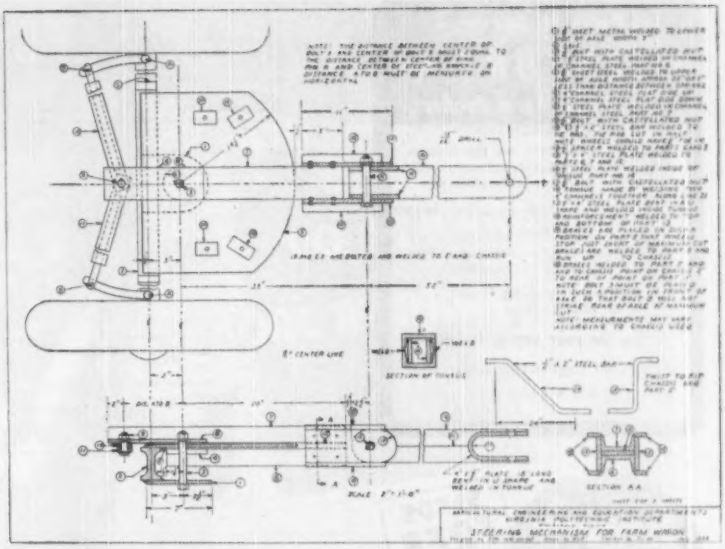
20. Weld and bolt braces (part no. 19 and 20) to fifth wheel and frame as shown in plan.

21. Paint chassis.

Construct Wagon Bed

1. Plane all lumber and cut to size and dimensions.

2. Space cross members on frame, drill ½" holes through cross members and frame and bolt to frame with ½" x 7" carriage bolts.



Bill of Material

For steering arrangement and tongue

Part No.	Amount	Type	Size	To be used for
5	1 Pc.	¾" plate iron	18" x 22"	Fifth wheel
1	1 "	¾" plate iron	7" x 7"	Bottom of front axle
10 & 11	2 "	¼" flat iron	2" x 21"	Reinforcing tie rod
19	2 "	¼" flat iron	2" x 30"	Bracing fifth wheel to frame
20	2 "	¼" flat iron	2" x 36"	Bracing fifth wheel to frame
8	1 "	¼" flat iron	3½" x 11"	Reinforcing channel iron (back of top pc.)
4	1 "	¼" flat iron	3½" x 6"	Reinforcing channel iron (back of bottom pc.)
12	1 "	¼" flat iron	4" x 6"	Spacer between channel irons
13	2 "	¼" flat iron	4" x 11"	Connecting tongue to steering arrangement
18	4 "	¼" flat iron	1½" x 10"	Braces for flat iron used to connect tongue to steering arrangement
14	2 "	⅜" flat iron	3½" x 4"	Reinforcing tongue where ¾" hole is drilled through channel iron
17	1 "	½" flat iron	4" x 18"	Clevis for end of tongue
16	2 "	4" channel iron	4' 8" long	Constructing tongue
7	1 "	4" channel iron	2' 6" long	To fit on top of fifth wheel
6	4 "	4" channel iron	2' long	To fit on bottom of the fifth wheel
9	1 ea.	¾" mach. bolt		To bolt tie rods to channel iron
15	1 ea.	¾" mach. bolt		To connect tongue to steering arrangement
3	1 ea.	¾" mach. bolt	5" long	To connect channel iron to fifth wheel
	8 ea.	¾" mach. bolt	1½" long	To bolt part No. 13 to channel iron
	8 ea.	¾" mach. bolt	1¾" long	To bolt braces to fifth wheel and frame
	3 ea.	Cotter keys		Locking castellated nuts

For chassis and bed

Amount	Type	Size	To be used for
250 Bd. Ft.	Oak boards	1" x 6" x 16'	Floor and side boards
8 Pcs.	Oak lumber	2" x 8" x 8'	Cross members
2 Pcs.	Oak lumber	2" x 6" x 16'	Edge boards of floor
2 Pcs.	Oak lumber	2" x 6" x 12'	Making standards
2 Pcs.	3/16" flat iron	2" x 22'	Side of bed
2 Pcs.	3/16" flat iron	2" x 12"	Cuffs for end gates
4 Pcs.	Angle iron	1" x 1" x 24"	Corners of end gates
4 Pcs.	¼" flat iron	1½" x 30"	Connectors for end gates
4 Pcs.	¼" flat iron	1½" x 4½"	Hooks for end gates
1 Pc.	Channel iron	To fit frame	Bracing end of frame by welding across rear end
4 Pcs.	4" channel iron cut to fit between axle & frame to block springs		
4 Pcs.	¼" x 2" flat iron welded to frame & channel iron blocking springs		
2 Pcs.	¼" x 1½" flat iron	8" long	Cross bars on top of "U" bolts
4 Pcs.	½" Round iron	Cut to length needed	To make "U" bolts to hold frame down on channel iron blocking springs
16 Ea.	½" Carriage bolts	7" long	Bolting cross members to frame
32 Ea.	5/16" Carriage bolts	4¼" long	Bolting edge board to end of cross members
164 Ea.	¼" Carriage bolts	2¾" long	Bolting side boards to standards
32 Ea.	¼" Carriage bolts	1½" long	Bolting end gate connectors to end gates
4 Ea.	5/16" Carriage bolts	1½" long	Bolting end gate connectors to end gates
32 Ea.	5/16" Carriage bolts	6" long	Bolting strap iron around side of bed
4 Ea.	¼" Carriage bolts	3" long	Bolting cuffs to front and back cross members

3. Bolt 2" x 5¼" side rails to end of cross members with 5/16" x 4¾" carriage bolts.

4. Bolt 3/16" x 2" flat iron around the edges of the side rails.

5. Complete floor of bed by nailing boards to cross members (use 10D common nails).

6. Construct four metal cuffs from

(*Continued on page 92*)

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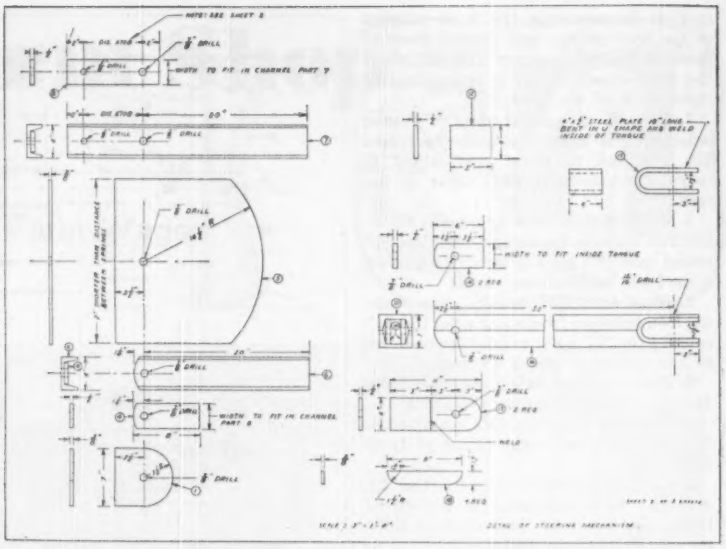

Teacher's Farm Shop

(*Continued from page 91*)

3/16" x 2" flat iron for standards for end gates and bolt cuffs to front and back cross members. (Size openings to fit 1¾" x 1¾" standards).

7. Place standards in place and bolt side boards to standards with ¼" x 2¾" carriage bolts.

8. Bolt angle iron to side boards as shown in drawing to hold end gates.

9. Construct connectors for end gates and sides of bed and connect to bed as shown in detail drawing of connectors for end and side boards on sheet No. 1.

10. Cross members, edges of all boards and bottom side of floor boards should be painted or treated with other preservatives before bolting and nailing together.

11. Complete painting or treating lumber with other preservatives after the bed is assembled.

For further information or more details, write Virginia Polytechnic Institute, Agriculture Education Department, Blacksburg, Va.

★

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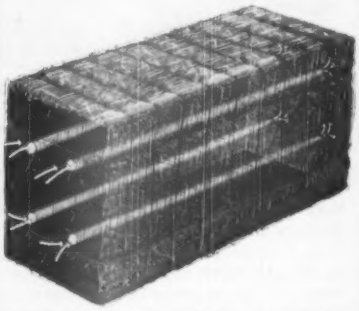

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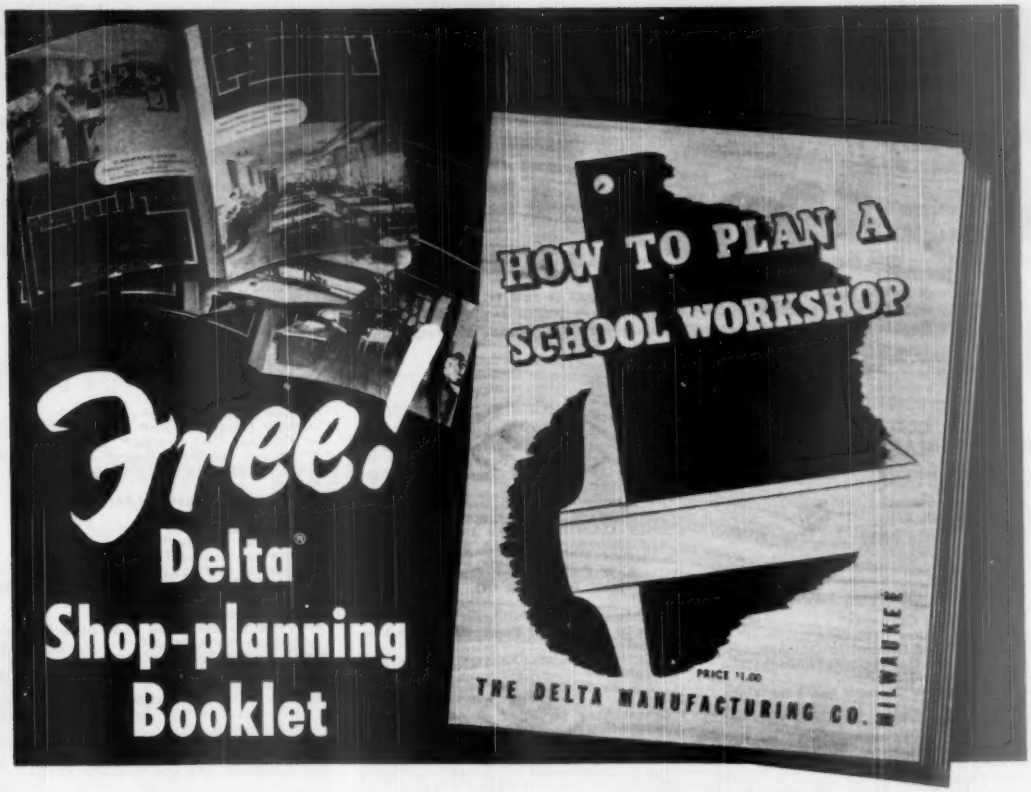

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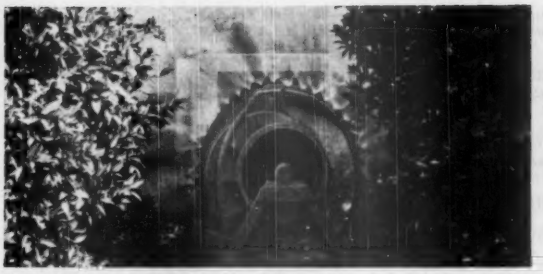
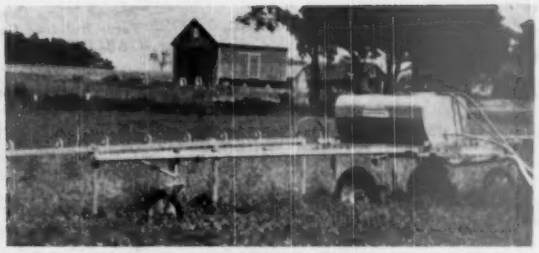


Ryder Cyclone duster sprayer, engineered for low volume spraying on the west coast, featuring the adjustable air discharge.



Dobbins Mfg. Company's field type sprayer with wide coverage boom.

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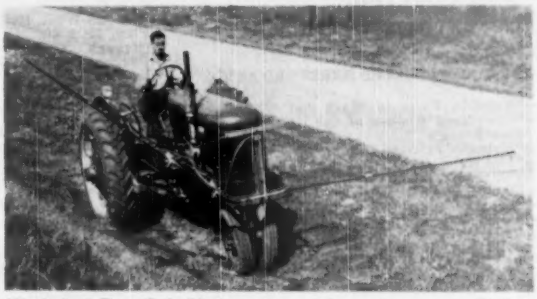
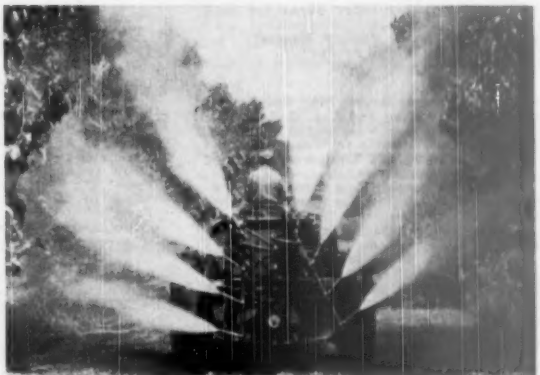


Mississippi Eng. Co.'s Master sprayer covers six rows or 20 feet.

Chapin CO_2 Knapsack type sprayer. Gas in the refillable bottle expells spray liquid.

Hudson Peerless Power sprayer on skids, mounted in bed of pick-up truck with boom at rear, showing how sprayer may be used with a spray gun for touch-up work and application.

Buffalo Turbine mist sprayer duster. High velocity turbulent air, produced by blower, atomizes spray-dust into small particles.



John Bean Low-Boy automatic spray mast, mounted at rear of sprayer, spraying 35 GPM at 600 lbs. pressure in peach orchard.

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Personal

1949-1950 officers of the Virginia County Agents' Association. (l-r): R. H. Burtner, Pincastle, sergeant-at-arms; J. E. Delp, Gate City, secretary-treasurer; I. Fred Stine, Winchester, vice president; R. A. Farmer, Warsaw, president.

Donald Qualmann, vo-ag instructor, Marathon, Wis., has been named president of the Marathon County Agricultural Teachers Association. **Eugene Lehrmann**, Wausau, was re-elected vice president, and **Wallace Mehlberg**, Wausau, was elected secretary-treasurer. The group includes 14 instructors.

H. R. Varney, dean and director of agriculture, New Mexico A & M College since July, 1947, has announced his resignation, effective March 1, to become dean of the college of agriculture, forestry and home economics, and director of the experiment station at West Virginia University, Morgantown, W. Va.

William J. Morse, known for his work in soybean development, retired November 30, after 42 years in the USDA.

William R. Walker, dairy specialist, University of Connecticut, died on November 6, as a result of a heart attack suffered two days earlier.

Frank Wing, who, as a vo-ag student from Baraboo, was president of the Wisconsin FFA Association in 1940-41, began his duties November 1 as supervisor of radio programs for the Wisconsin state department of agriculture.

J. E. Kraus, graduate of Colorado A & M College's horticulture department since 1932, has been appointed associate director of the experiment station at the University of Idaho.

Recently-elected officers of the Delaware County Agents Association are: **William E. Tarbell**, Kent county, president; **Edward H. Schabinger**, New Castle county, vice president; and **William H. Henderson**, Sussex county, secretary-treasurer.

Fred H. Wagoner, assistant farm agent, Edgecombe county, N. C., has been appointed North Carolina assistant state 4-H club leader. **Wagoner** took over his new duties on December 1, and will work out of the state 4-H office in Raleigh. He is the son of **J. I. Wagoner**, Guilford county farm agent, and secretary-treasurer of the National Association of County Agricultural Agents.

Berry H. Akers, editor, The Farmer, St. Paul, Minn., was named president of the American Agricultural Editors Association for 1950, at the annual business meeting in Chicago on November 30. **Ferdie Deering**, editor, The Farmer-Stockman, University of Oklahoma, was named vice president. **Secretary C. L. Mast** will continue to serve the association as secretary-treasurer.

Dwight Fairbanks, formerly with the American Dry Milk Institute, is now assistant extension editor at Washington State College, working under **Cal Anderson**.

Harold E. Jones, Concordia, Kan., has joined the agricultural extension service staff, University of Minnesota, as soil specialist.

George W. Gustafson, county agent supervisor for the Montana Extension Service and for the past three years state coordinator for the Montana Rural Fire Fighters Service, has been named chairman of the extension service farm safety committee. Gustafson will continue as coordinator of the rural fire fighters service, and as chairman of the farm safety committee he will continue the work begun by **J. C. Taylor**, who retired November 30.

County Agent Hilmer Axling, Spokane, is the new president of the Washington County Extension Agents Association. Other officers include: **Clint Okerstrom**, Lewis county, vice president; **M. C. Hougan**, Yakima county, secretary-treasurer; **George Delaney**, Grant county; and **J. A. Johnston**, King and Roffler counties, directors.

J. S. Buchanan, native of Smith county, Va., recently accepted a position as extension livestock specialist at North Carolina State College.

H. G. Russell, Illinois extension livestock specialist, has been elected to the board of directors of the St. Louis National Stockyards Co. and the St. Louis Junction Railway Co.

John A. Schultz, former assistant county agent in Goshen county, Wyo., is now Natrona county agent.

A. H. Groth has assumed his duties as the newly-appointed director of the University of Missouri School of Veterinary Science. Groth was former director of the Regional Animal Research Laboratory, Auburn, Ala.

Robert F. Fletcher, graduate in agriculture of the Pennsylvania State College, where just recently he was awarded his master's degree for special work in vegetables, has been named extension vegetable specialist of the college.

Virgil F. Burk, former Missouri county agent, and supervisor of institutional farm training, under the adult educational service at the University of Missouri, has been appointed state extension entomologist for the University of Missouri.

Vo-Ag Instructor John Mathews, Shabbona, Ill., will join the staff of the vocational agriculture service, University of Illinois, around February 20.

John Kenneth ("Ken") Stern, Pennsylvania State College, has been chosen president of the American Institute of Cooperation, with headquarters in Washington, D. C. He will take office January 15, 1950.

1950 officers of the Soil Conservation Society of America, elected at the annual meeting, held in St. Louis, Mo., November 10-12. (l-r) Lloyd E. Partain, retiring president, Curtis Publishing Company; Austin L. Patrick, second vice president, regional conservator, Soil Conservation Service, Upper Darby, Pa.; Firman E. Bear, president, head, soils department, Rutgers University, New Brunswick, N. J.; Alvin C. Watson, secretary, assistant regional conservator, Soil Conservation Service, Upper Darby, Pa.; J. H. Christ, first vice president, regional conservator, Soil Conservation Service, Portland, Ore.; and Russell G. Hill, treasurer, executive secretary, State Soil Conservation Committee, East Lansing, Mich.

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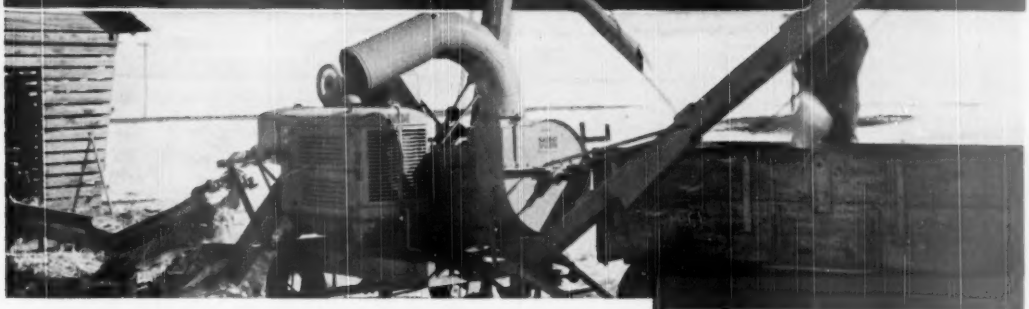

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